Ganesh-Vidya

The traditional Indian approach to Phonetic Writing



L·S·Wakankar

Script Study Group
Bombay. 1968



TO THE UNDERSTANDING OF THE FOREMOST SCIENCE OF HUMAN COMMUNICATION, GA-NE-SHA—VIDYA

DEDICATION

INVOKING THE PRIMORDIAL ONE, THE FORM OF DIVINE 'WORD'

GA-NE-SHA, THE LORD OF PHONEMIC 'CATEGORIES'

THE AUTHOR SEEKS THE BLESSINGS OF THE LEARNED

AND HUMBLY DEDICATES THIS LITTLE WORK TO THE

SCRIBE AND HIS SCRIPT

THROUGH WHOM KNOWLEDGE IS TRANSMITTED AND PRESERVED

FOR ALL MEN FOR ALL TIME

'GANESHA HYMN' GANAPATI-ATHARVANA-SHEERSHAM

TEXT OF THE 'TOP-HYMN' TO ATHARVA-VEDA

ॐ नमस्ते गणपतये ॥ त्वमेव प्रत्यक्षं तत्त्वमसि ॥ त्वमेव केवलं कर्तासि ॥ त्वमेव केवलं धर्तासि ॥ त्वमेव केवलं हर्तासि ॥
त्वमेव सर्वं खल्विदं ब्रह्मासि ॥ त्वं साक्षादात्मासि नित्यं ॥ ऋतं वच्मि ॥ सत्यं वच्मि ॥ अव त्वं मां ॥ अव वक्तारं ॥
अव श्रोतारं ॥ अव दातारं ॥ अव धातारं ॥ अवानूचानमव शिष्यं ॥ अव पश्चात्तात् ॥ अव पुरस्तात् ॥ अवोत्तरात्तात् ॥
अव दक्षिणात्तात् ॥ अव चोर्ध्वात्तात् ॥ अवाधरात्तात् ॥ सर्वतो मां पाहि पाहि समंतात् ॥ त्वं वाङ्मयस्त्वं चिन्मयः ॥
त्वमानंदमयस्त्वं ब्रह्ममयः ॥ त्वं सच्चिदानंदाद्वितीयोसि ॥ त्वं प्रत्यक्षं ब्रह्मासि ॥ त्वं ज्ञानमयो विज्ञानमयोसि ॥
सर्वं जगदिदं त्वत्तो जायते ॥ सर्वं जगदिदं त्वत्तस्तिष्ठति ॥ सर्वं जगदिदं त्वयि लयमेष्यति ॥ सर्वं जगदिदं त्वयि प्रत्येति ॥
त्वं भूमिरापोनलोनिलो नभः ॥ त्वं चत्वारि वाक्पदानि ॥ त्वं गुणत्रयातीतः ॥ त्वं देहत्रयातीतः ॥ त्वं कालत्रयातीतः ॥
त्वं मूलाधारस्थितोसि नित्यं ॥ त्वं शक्तित्रयात्मकः ॥ त्वां योगिनो ध्यायंति नित्यं ॥ त्वं ब्रह्मा त्वं विष्णुस्त्वं रुद्रस्त्वमिंद्र-

स्त्वमग्निस्त्वं वायुस्त्वं सूर्यस्त्वं चंद्रमास्त्वं ब्रह्म भूर्भुवः स्वरोम् ॥ गणादिं पूर्वमुच्चार्य वर्णादिं तदनंतरं ॥ अनुस्वारः परतरः ॥
अर्धेंदुलसितं ॥ तारेण रुद्धं ॥ एतत्तव मनुस्वरूपं ॥ गकारः पूर्वरूपं ॥ अकारो मध्यमरूपं ॥ अनुस्वारश्चांत्यरूपं ॥
बिंदुरुत्तररूपं ॥ नादः संधानं ॥ सꣳहिता संधिः ॥ सैषा गणेशविद्या ॥ गणक ऋषिः ॥ निचृद्गायत्री छंदः ॥ गणपतिर्देवता ॥
ॐ गँ गणपतये नमः ॥ एकदंताय विद्महे वक्रतुंडाय धीमहि ॥ तन्नो दंती प्रचोदयात् ॥ एकदंतं चतुर्हस्तं पाशमंकुश-
धारिणम् ॥ रदं च वरदं हस्तैर्बिभ्राणं मूषकध्वजम् ॥ रक्तं लंबोदरं शूर्पकर्णकं रक्तवाससं ॥ रक्तगंधानुलिप्तांगं रक्तपुष्पैः
सुपूजितम् ॥ भक्तानुकंपिनं देवं जगत्कारणमच्युतं ॥ आविर्भूतं च सृष्ट्यादौ प्रकृतेः पुरुषात्परं ॥ एवं ध्यायति यो नित्यं
स योगी योगिनां वरः ॥ नमो व्रातपतये नमो गणपतये नमः प्रमथपतये नमस्ते अस्तु लंबोदरायैकदंताय विघ्ननाशिने
शिवसुताय श्रीवरदमूर्तये नमः ॥

– गणपत्यथर्वशीर्षम्

★ First reciting the 'Phonemic Categories', then will follow the Graphic 'Colourdrawn' letters ending ultimately in the 'Nasals' including the crescent of the Half-moon, Pronounce the divine word (गँ GĂ) vibrant with high pitch. Thy graphic visual form is (drawn) like this : the initial part is the consonantal essential of Ga, the middle part is the symbol of 'A', the last part is the NASAL symbol, topped with a dot. Now pronounce the composite 'word' as a single-syllable. Such is the (secret of) Ganesha-Vidya (the Science of Phonology and Scriptology).



Nagarjunakonda Scribe
RAJA-LEKHAKA



Wooden Scribe from Thebes
(Cairo Museum)



Two Assyrian Scribes recording plunders, from a captured city (8th cen. B.C.)



God TOTH, in the form of IBIS, scratched his bill in the shores of the Nile and thus is said to have invented 'writing.'

INTRODUCTION

This little book presents some data on the subject of Phonology and Scriptology from Indian Literature and Epigraphy starting from the Ganapati-Atharva Sheersha which is a composition of Vedic Tradition. With the references in Sanskrit Grammar alluding to the creation of PHONEMES from the SHIVA HYMN (Maheshwari Sootra), created in the interlude of the Cosmic Dance of Shiva (Nataraja), the much-sought rationale of the Translation of Sound to Form is revealed.

The author, Shri L. S. Wakankar, who is an eminent epigraphist, was seeking this link for many years, and inspired by the thoughts of his revered colleague, Shri A. B. Walawalkar, presents this work, in the hope that in a world fragmented by divergent ideologies and misunderstanding, the great savants who quietly serve mankind's thirst for understanding and knowledge, through the written and printed word, may find some food for thought.

The charts at the end, show the logical geometric basic design of SCRIPT consistent with the fine phonetic classification of human speech and a reconciliation chart for the current form of the Devanagari Script (literally—the Script of the Gods). The Indian alphabets and their development, through the 1st century, 10th century, and 20th century in the most important provincial scripts are then illustrated to show the obvious unity in the script of all these languages.

The author and the group of students represented by this publication do not wish to take any political or reformist platform, but feel that the genius of this phonetic miracle must be placed before the leaders of language, as a collection of facts and logic.

Our tradition has bequeathed a treasure in our phonetic script which is easily adapted in a simplified form



Tiru Manikka Vacaka, devotee of Shiva (S. India) with leaf in hand carved with letters of later Cola Period.

to all keyboards, from the humble manual typewriter to the sophisticated photo-typesetters.

The world today is being increasingly served by computers and other mechanical marvels which take out the drudgery of repetition and slowness from human effort. The vast amount of time and energy being spent on adapting these computers to typesetting, need not be outlined, nor their success and acceptance in a very short time. O.C.R.-B (Optical Character Recognition-B),* M.I.C.R. (Magnetic Ink Coding and Recording) and in short, the tremendous efforts put in to reduce, if not to eliminate, the need for keyboarding (the slowest of the operations), is being reviewed and the scientist, and the teacher, and all intellectuals concerned with speedy, economic, and fool-proof thought-communication will, we feel sure, find some useful information in this booklet. This will have justified the group's efforts and ambitions.

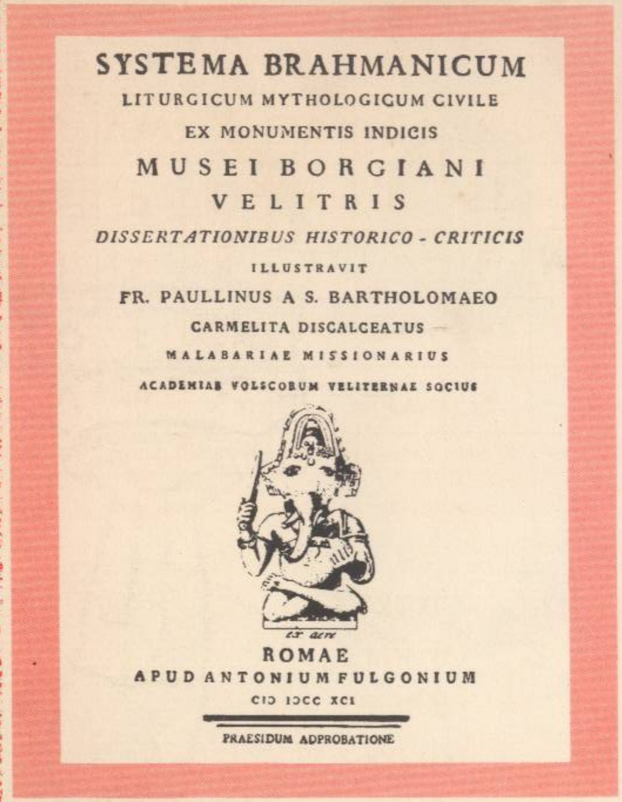
The Format

This Study Group feels that, in the printing field, not much original contribution has been made by India. Our designers have followed the Western tradition in printing. The Indian habit of reading, writing and using books (handwritten) is as different from that of the West as in eating, speaking, sitting and dressing habits. In keeping with the Indian book tradition, the following points have been kept in mind :—
(1) illustration in the left margin and pertaining to the text; (2) an unjustified right hand margin; (3) in the two-page spread an uninterrupted flow of reading from top to bottom, rather than the verso and recto movement of the Western tradition; (4) a simple yet effective means of binding.

R. Subbu
Convenor,
SCRIPT STUDY GROUP

* Adrian Frutiger and colleagues on the 'O.C.R.B.' (Optical Character Recognition-B)

GA-NE-SHA ON A BOOK PUBLISHED FROM ROME, IN 1791



SYSTEMA BRAHMANICUM

LITURGICUM MYTHOLOGICUM CIVILE

EX MONUMENTIS INDICIS

MUSEI BORGIANI

VELITRIS

DISSERTATIONIBUS HISTORICO - CRITICIS

ILLUSTRAVIT

FR. PAULLINUS A S. BARTHOLOMAEO

CARMELITA DISCALCEATUS

MALABARIAE MISSIONARIUS

ACADEMIAE VOLSCORUM VELITERNAE SOCIUS

ex aere

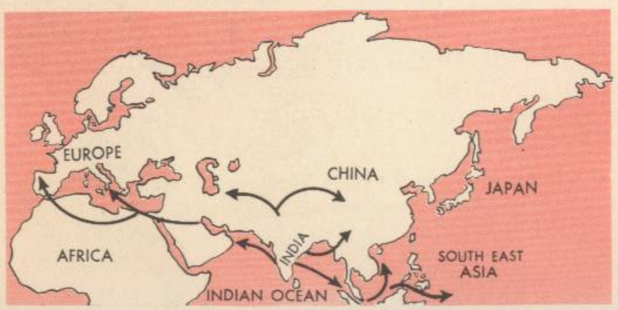
ROMAE

APUD ANTONIUM FULGONIUM

CIↃ IↃCC XCI

PRAESIDUM ADPROBATIONE

KNOWLEDGE OF GRAMMAR WENT FROM INDIA TO ALL ANCIENT COUNTRIES

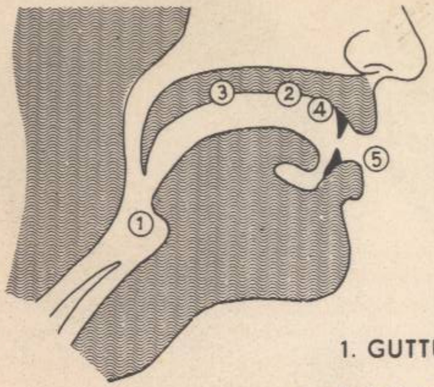


PHONOLOGY AND SCRIPTOLOGY

In a study of the relations of Phonemes with their relative Graphemes, it becomes clear that the logical outcome of the phonetically inadequate 26-letter Roman script is a recourse to the cumbersome 'spelling' system and the unrelated hectic forms of 'lettering'; these have become a problem. Where is the basis for a reasonable 'phonography'? The agony over the ideal 'phonography' is aptly expressed in "An essay on Typography", by Eric Gill :

> "It is no longer possible, even if it ever was, to say that such and such a letter always and everywhere signifies such and such a sound, and, for example, a combination of the four letters O-U-G-H is used to signify at least seven distinctly and even widely different sounds—'though the tough cough and hicough ploughs me through, my thought remains clear', and it is this: that it is simply stupid to make pretence any longer that our letters are a reasonable means of rendering speech in writing or printing.
>
> What is the revolution demanded? Reformed spelling? No. The abolition of spelling—the abolition of lettering as we know it altogether.
>
> At any rate the first thing to do is to teach everyone phonography—something which reasonably presents sounds. Letter has had its day, spelling and philology and all such pedantrics have no place in our world. The only way to reform modern lettering is to abolish it."

Had Eric Gill been introduced to the Indian 'phonography' he would have been consoled. It should be a revelation to anyone to get introduced to Devanagari's remarkable functional letter forms. It would be an interesting reading to students of Type-history



PHONETIC REGIONS

1. GUTTURAL
2. PALATAL
3. LINGUAL
4. DENTAL
5. LABIAL

ROMAN SCRIPT IN PERIODIC–PHONETIC–CLASSIFICATION

VOWELS	LABIALS	GUTTURALS	PALATALS	LINGUALS	DENTALS	NASALS
A	B	•	C	D	•	•
E	F	GH	•	•	•	•
IJ	•	K	•	•	L	MN
O	P	Q	•	R	ST	•
U	VW	X	Y	Z	•	•

to note that Graeko-Roman Letter-sequence fits perfectly into the Paninian analysis of phonemes and their groupings. (See the Table in the margin).

EVOLUTION OF LATIN SCRIPT

Scriptologists tell us that the modern 26-letters owe their evolution to ancient idea-pictures. Through countless generations the original pictures changed stage by stage, losing today, all resemblance to the original 'picto-graphs'. The 'spelled' letters compose words, by an assumed break-up of syllables, and this code of communication claims to be 'the highest attainment of the human mind !'.

'Once upon a time the knowledge of his day was transmitted by the medicine-man, the story-teller, the philosopher and the bard by telling and memorising. The 'book' of the Bible lived in legend for hundreds of years. Beginning from the Cave-man's painting, the invention of drawing and signs developed into the art of the Egyptian picto-graphs, the Chinese ideographs, and the semetic-phoenician alphabetic signary[1]'.

The early Greek letters were learnt by CADMOS of Thebes in Phoenicia by 1313 B.C. (as computed by Eratosthenes). They were just 16 in number, to which Palamedes (during the Trojan War in about 1183 B.C.) added the letters **th, x, ph** and **kh** and Simonides the letters **z, long e, ps** and **long o.**[2] The Ionian letters (out of many others) were made standard in 403 B.C. The Romans borrowed this writing process from the Greeks, through the intermediacy of the Etruscans, who later changed the writing process from left to right following the Greeks.[3]

The letter-names are meaningless in Greek, but are meaningful words in 'Semetic languages', and so their origin is attributed by Dr. David Diringer, to 'some unknown Syro-Palestinian Semite genius, who created the alphabets'. It is


INDUS VALLEY-SEAL


BABYLONIAN SEAL (BRITISH MUSEUM)
CUNEIFORM-BRAHMI (6 CEN.B.C.)


SEAL FROM DJOKHA SUMER
PRE-SARGON (3000-2400 B.C.)

PUNCH-MARKED SEAL


CHANDRAKETU GARH
SEAL (S. K. ROY)


a. COIN (J. PRINCEP)


b. COIN (LEYDEN)


c. PUNCH-M. COIN (LEYDEN)


d. PUNCH-M. COIN
(LEYDEN)


e. COINS


f. (J. PRINCEP)



BHATTIPROLU CASKET INSCRIPTION (POT-LID)
(WITH REMAINS OF BUDDHA, 6 CEN. B.C.)

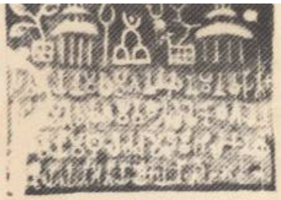
surmised that 'the central position of the Semites, since non-datable pre-historic period, served as a principal route by which goods from India were transhipped and carried overland to the ports of the eastern Mediterranean.'[4] Shall we then presume that the grammatic and scriptological ideas also followed the trade-route ?

However, the discovery of pre-Sargon seals in the Indus Valley and in the Middle East,[5] suggest the possibility of the Western forms being influenced by the superior phonetic Brahmi system. This influence on the Greek and Roman is emphasised by L. A. Wadell,[6] and A. B. Walawalkar,[7] and on the Arabic by Dr. S. Mahdi Hassan.[8] The origin of Nabatean Arabic from Girnar Brahmi has been established by the present author with palaeographic and literary evidence.[9]

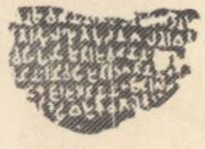
'LOST SCRIPTS' RE-DISCOVERED

The Hindus had lost all knowledge of the mother-script Maheshwari (Proto-Brahmi). Its simple and un-ambiguous technique, remained unknown until the patient and painstaking European Missionaries collected thousands of old inscriptions and studied them, and, at long last, James Prinsep succeeded in decoding the Asokan Brahmi letters in 1837.

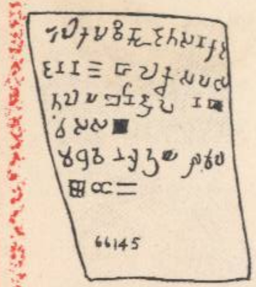
In spite of their possessing a rational and well-designed phonography, the Hindu grammarians deprecated reliance on writing because no devices come up to the performance of the marvellous human voice. This fact was used as negative evidence, to give credence to the speculation that the origin of Indian writing sprang out of the Greek influence after Alexander's visit to India. The Greek origin theory was heralded by Prinsep, Halevy, Dr. Wilson, Burnell etc,; similarly the Semetic-origin theory was upheld by Sir William Jones (1806), Kopp (1821), Weber (1856) and Buehler (1872).[10] Such theories ultimately came to a close when mystic seals were



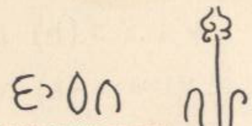
SOHGURA COPPER PLATE : 6 CEN. B.C.



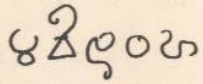
MAHASTHAN INSCRIPTION (4-3 CEN. B.C.)



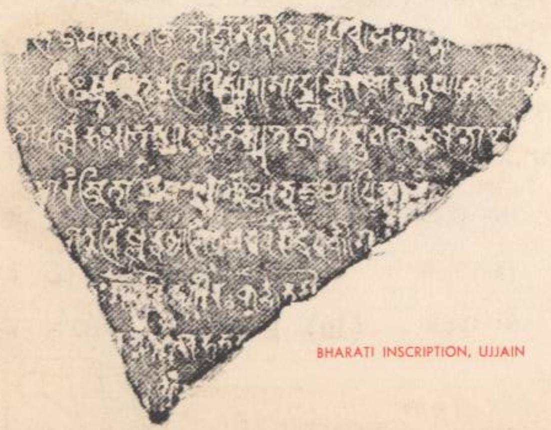
POTSHERD, CAIRO MUSEUM (2 CEN. A.D.)



GWALIOR CAVE BRAHMI PAINTING

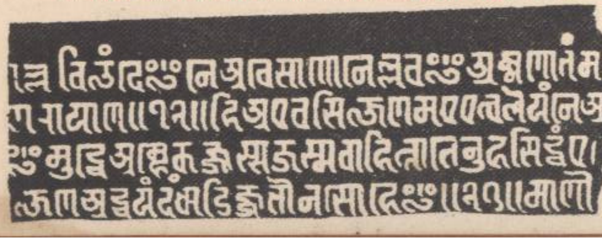


BHOPAL CAVE BRAHMI



BHARATI INSCRIPTION, UJJAIN

PARAMAR SLATE-STONE NAGARI INSCRIPTION FROM DHAR (CENT. INDIA)



found by the hundreds, in Mohenjodaro and Harappa (of the Indus Valley Civilization). As many as one hundred Harappan sites have been discovered till 1966, bringing to light 'a number of terracotta seals and graffiti which belong to the intermediate period' (i.e. between the Harappan and the Asokan epigraphy).[11] Curiously enough, a Babylonian Cuneiform tablet with Brahmi-Sanskrit writing was discovered in the Middle-East excavations and is now preserved in the British Museum (photo-prints of this seal were collected in 1962 by the author); the find of Djoka seals (illustration brought from Musee' Louvre, Paris, by V. S. Wakankar), from the pre-Sargon layer (3000-2400 B.C.), was considered 'disturbing' by Sir John Marshall.

Further writings may come to light as more excavations are made, but these finds have already established the antiquity and the forms of pre-Asokan Indian Script.

PHONETIC MIRACLE

The 'discovery' of the 'Sanskrit', by Western Scholars brought into lime-light elaborate linguistic achievement of Panini's genius. Of its grandeur, Weber wrote :

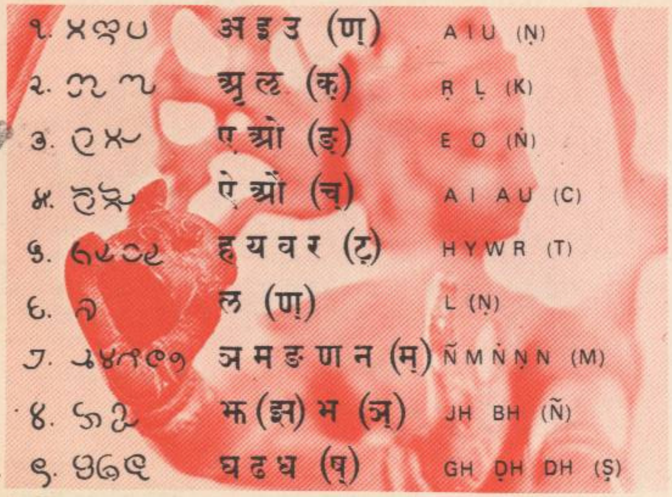
> "We at once pass into the magnificent edifice which bears the name of Panini as its architect, and which justly commands the wonder and admiration of every one who enters. Panini's grammar is distinguished above all similar works of other countries, partly by its thoroughly exhaustive investigation of the roots of the language and the formation of words, partly by its sharp precision of expression—and which, by the very fact of its sufficing all the phenomena which the language presents, bespeaks at once of the marvellous ingenuity of its inventor, and, his profound penetration of the entire material of the language."[12]

MAHESHWARI BRAHMI FORMS

CREATED OF CRESCENT-SIGNS STRUCK BY SHIVA'S DAMARU THE HOURGLASS-SHAPED DRUM

(after A. B. WALAWALKAR, *Pre. Ashokan Brahmi*)

ॐ A U



१.	अ इ उ (ण्)	A I U (N)
२.	ऋ लृ (क्)	Ṛ Ḷ (K)
३.	ए ओ (ङ्)	E O (Ṅ)
४.	ऐ औ (च्)	AI AU (C)
५.	ह य व र (ट्)	H Y W R (T)
६.	ल (ण्)	L (N)
७.	ञ म ङ ण न (म्)	Ñ M Ṅ Ṇ N (M)
८.	झ (झ) भ (ञ्)	JH BH (Ñ)
९.	घ ढ ध (ष्)	GH ḌH DH (Ṣ)
१०.	ज ब ग ड द (श्)	J B G Ḍ D (Ś)
११.	ख फ छ ठ थ (व्)	KH PH CH ṬH TH (V)
१२.	च ट त क प (य्)	C Ṭ T K P (Y)
१३.	श ष स (र्)	SH Ṣ S (R)
१४.	ह (ल्)	H (L)

– इति माहेश्वराणि सूत्राणि अनादिसंज्ञार्थानि।।

END OF APHORISMS OF MAHESHWARA.
ANCIENT ESSENCE OF CATEGORIES.

THE GIFT OF MAHESHWAR (SHIVA)

Indian letters are not the descendants of any 'picto-grams' or 'ideograms'; they are the result of deliberate schematic designs based on the well-classified Vedic Phonemes (see illustration p. 5). This is in vivid contrast to Arabic letter-forms (which have letter-names such as, Alif, Be, etc.) or Graeko-Roman forms (which have letter-names, such as, Alpha, Beta, Gama, Delta, etc.). The archaic Indian cursive forms appear to have degraded into the angular forms of Asokan letters and were reformed in the later letters of Brahmi, Bharati, Devalipi (Nagari), and, lastly in Devanagari. The number of letters is 64 in the Rigvedic texts (but 63 in the Yajurvedic texts, which lack the letter l, the nearest to the Tamil ऌ). The early practice of writing, from right to left, was abandoned, and left-to-right writing was adopted, but in Indian Numerals the ancient sequence is preserved and the digits, even today, move leftwards.[13]

Tradition has it that when approached by Seers like Sanaka, Shiva (Nataraja) danced at Tillai (Chidambaram,[14] the centre of the Universe, an old town in South India) and during an interlude played 14 aphorisms on his Drumlet (DAMARU). These were called the 14 Maheshwari Sootras.[15] This became the basis of the phonetic alphabet and also the 'Key' to Panini's Grammar.

'Damaru' (the hour-glass-shaped Drum of Shiva) has the apexes in contact on a point-limit **(bindu)**, from which manifestation begins, and from which all the rhythms of manifestation are said to have come forth.[16] The Southern-Image of Shiva (Dakshina-Murti), representing the Being-of-Knowledge (Vijñana-maya-murti) is shown standing on the Rhythm-of-the-Letters (Varna-matrika).[17]

Shiva inspired Panini with his Maheshwari-Sootras, used by grammarians as the 'key' to Panini's Grammar.

VEDIC LETTERS

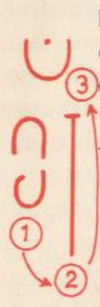
वैदिक वर्ण :

							RG-VEDA ऋग्वेद	YAJUR-VEDA यजुर्वेद
		कंठ्य	तालव्य	ओष्ठ्य	मूर्धन्य	दंत्य		
स्वर VOWELS	ह्रस्व SHORT	अ	इ	उ	ऋ	ऌ		
	दीर्घ LONG	आ	ई	ऊ	ॠ			
	प्लुत PROTRACTED	आ३	ई३	ऊ३	ॠ३			
	संध्यक्षर CONJUNCT	ए	ऐ	ओ	औ			
	प्लुत संध्यक्षर PROT-CONJUNCT	ए३	ऐ३	औ३	औ३		२१	२१
अयोग वाह DEPENDENT ELEMENTS	अनुस्वार NASALS	ꣳ viz. M, N, etc.						
	विसर्ग OFF-GLIDE	ः viz. H						
	जिह्वामूलीय VELAR	ᳵ [ᳵक, ᳵख]						
	उपध्मानीय VOICELESS BILABIAL FRICATIVE	ᳶ [ᳶप, ᳶफ]					४	४
CON-SONANTS स्पर्श वर्ण 'TOUCH'-CLASSES (STOPS)	संज्ञा → SERIES	मृदु	मृदु महाप्राण	कठोर	क. महाप्राण	अनुनासिक		
	कंठ्य GUTTURAL	क	ख	ग	घ	ङ		
	तालव्य PALATAL	च	छ	ज	झ	ञ		
	मूर्धन्य LINGUAL	ट	ठ	ड	ढ	ण		
				ळ	ळह		ळ अभाव	
	दंत्य DENTAL	त	थ	द	ध	न		
	ओष्ठ्य LABIAL	प	फ	ब	भ	म	२७	२६
अंतस्थ-अर्धस्वर : SEMIVOWEL		य	र	ल	व		४	४
		(इ+अ)	(ऋ+अ)	(ऌ+अ)	(उ+अ)			
ऊष्माण: HOT (FRICATIVES)		श	ष	स	ह		४	४
यम: FAUCAL PLOSIVE		कुं	खुं	गुं	घुं		४	४
							६४	६३

Shiva is again, in Padma Purana, said to have taught Shri RAMA (Raghava) the orthography of Bharati-Devalipi letters. (See pp. 7-8 for the text.)

'AINDRA' PHONOGRAPHY

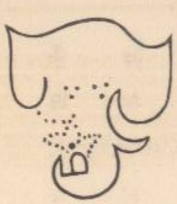
The Vedas contain a hymn, known as Brahmanaspati Sooktam. It is followed by another hymn called Ganapati-Atharvanasheersham which appears to be a later composition, but is based on the Vedic tradition, and in which the constituents of the syllable GA is described graphically as follows :



First recite the Phoneme, then draw the Graphemes, ending ultimately in the nasal sign including the crescent form (half moon). Pronounce the GRAPHEME vibrant with high pitch. Such is thy graphic visual form. The initial part is the consonant element of **GA**, the middle part is the Vertibar of **A**; the last part is nasal-form (with half moon), topped with a dot. Now pronounce as a single syllable. This is the phonological and scriptological (secret of) GANESHA-VIDYA.[18] (Original Text, calligraphed by R. K. Joshi is reproduced on page 1. It is also surprising that all earlier MSS, as well as prints, denote the 'Beeja'-sign as गं, and not as गँ!)

Taittareeya Samhita mentions that the earliest speech was uncontrolled; hence the Gods called upon Indra to tame it by creating laws of Grammar. Indra, then, disciplined it, and hence it is called Grammared, or "cultured"—the root-meaning of the word 'Sanskrit'.[19]

The well-known Sanskrit Grammarian Yaska is referred to as a South Indian (Nirukta, 6.9; Keith, History of Sanskrit Literature, p. 15).[20] The Aindra Grammarian KATYAYAN is also referred to as a South Indian by Patanjali.[21] It is worth noting



Tamil rendering of AŬ



सर्वज्ञोऽपि गणेशो यत्क्षणमास्ते विचारयन् ।
तावच्चकार व्यासोऽपि श्लोकानन्यान् बहूनपि ॥८३॥

महाभारत, आदिपर्व, अ. १

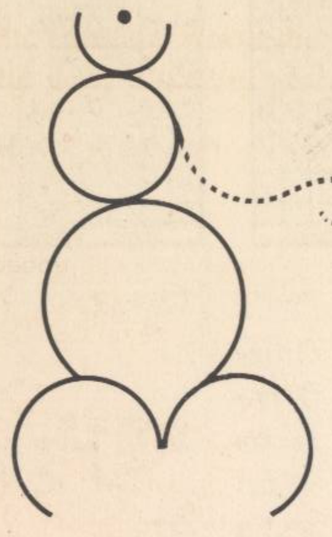
that Tamil and other South Indian languages are still governed by the rules of Aindra Grammar as distinct from the Paninian Grammar of the North Indian languages.

THE GANESH TRADITION

To the Hindu the Divine WORD is 'AUM', to Zoroastrians it is 'AHUM' and to Muslims, Jews and Christians it is 'AMEN'. The origin of the Divine Word, according to Indian Grammarians, is 'INPLOSION' (Vaiyyakaran Bhooshana, Karika 4);[22] the mono-syllabic divine word 'Aum' is worthy of worship as it is the spontaneous word of the God (Chandogya Upanishad, 1.1).[23]

The Ganapati-Atharva Sheersha, in describing the order of study of 'Ganesha-Vidya' (Phonology & Scriptology) places the recitation of 'Ganas' (phonemic categories) at the first stage, then follows the drawing of Alphabets with (earth) colours, i.e. 'Varnas'. Ganesh is the lord of categories (Ganas). "Everything which our senses perceive or our mind can grasp can be expressed in terms of **kind**, of category (Gana)........The ruler of all categories is Ganapati, identified with divinity in its perceptible manifestation........The stage reached by a yogi in his ultimate identification (Samadhi) is called 'Ga', the goal and the principle called 'Ja', the 'origin', hence the symbol of Elephant Head for the Ganesha, son of Shiva".[24]

When VYASA had resolved to compose the Mahabharata Epic, he was confronted with the problem of finding an efficient writer. He meditated on Ganesh and the Lord presented himself to Vyasa as a scribe and thus enabled the epic to be written. [See also the marginal illustration of how the phonogram 'AUM' also inspired the creation of the icon of GA-NE-SHA.] According to iconographists the image of Ganesh, with the Elephant's Head, spread all over the world during the post-Mahabharat period.



Vedic rendering of AU Suggesting icon of Ga-ne-sha



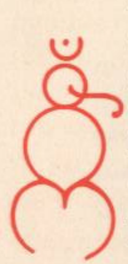
TAXILA SILVER SCROLL (KHAROSHTHI) A.D. 76
(FOUND IN DHARMARAJIKA STUPA)



PORTION OF PALM-LEAF FROM NEPAL (1165 A.D.)

The ancient Graphic structure of the mystic syllable (represented on the cover) as a graphic combination of signs A, U and M finds mention in Aitareya Brahmana (5.32), Kaushitaki Brahmana (26.5) and Ashwalayan Shrouta-Sootra (10.4). This mystic symbol is found painted on walls of pre-historic caves in India, and the sign is found on hundreds of Ujjain coins (along with the Swastika) and on many other punch-marked coins, it is also engraved on the Sohugara Copper-plate of great antiquity (see illustration p. 4).

The significance of its graphic structure came right-down to the Marathi saint JNYANESHWARA, who completed his Commentary on the Bhagavad Gita in 1290 A.D. :



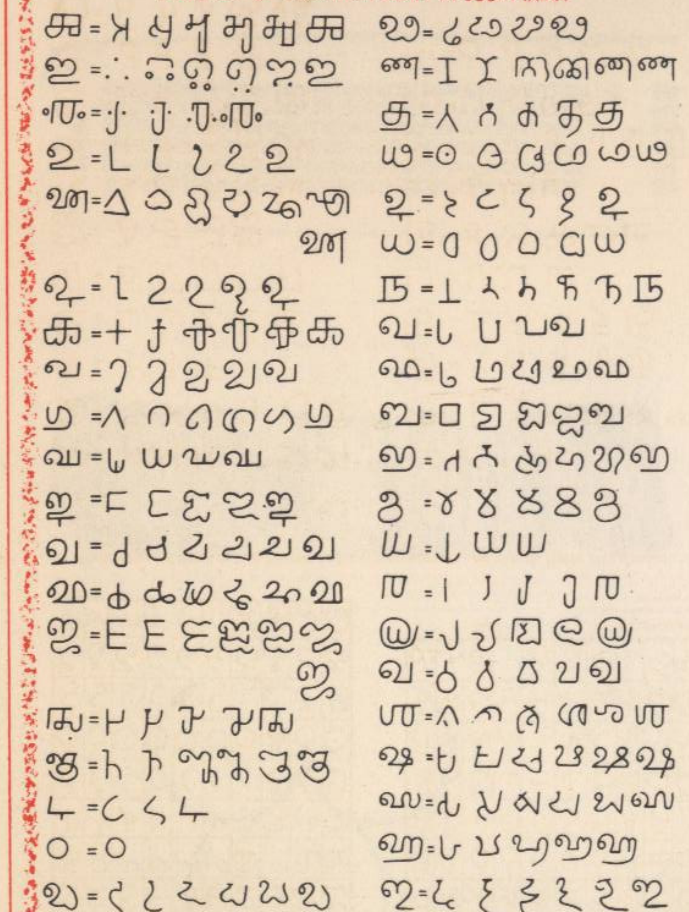


> Salutations to AU the FIRST BEING praised by the Vedas and realisable by Self alone, which is ONE'S OWN SELF. That first are you, the GA-NE-SHA, who enlightens with complete knowledge. This Divine-Word is COMPLETE. Its image is beautiful, wherein the faultless graphic of the Script is manifest. Both feet are represented by the A-form, the big belly is represented by the U-form and the head is represented by the M-form. (It is interesting to note here that such graphic-picture forms were constructed not with the Medieval Devanagari letters, but with the ancient Maheshwari Brahmi letters.) When these three letters A-U-M combine, the Divine-Word manifests. I bow to it, the FIRST ELEMENT which I have understood through the grace of my Guru.[25] . . . (Lord said I am 'A' manifest in all letters.)[26]

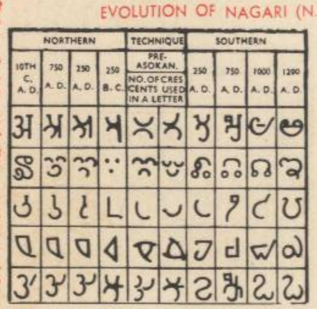
The graphic form of A-U-M is, again, clearly referred to by the saint TUKARAM (1609-1650 A.D.), contemporary of Shivaji the great Maharatta Ruler :

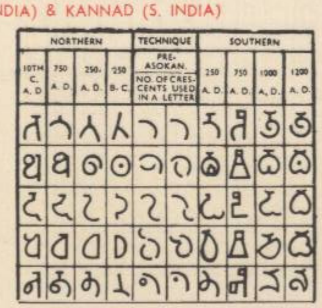
> "The figure of AUM resembles the form of Ga-ne-sha; from it are derived the THREE Gods. A-kar represents

EVOLUTION OF GRANTHAM SCRIPT IN SOUTH INDIA



EVOLUTION OF NAGARI (N. INDIA) & KANNAD (S. INDIA)





Brahma, U-kar the Vishnu and M-kar, be it known, represents Shiva-Maheshwara. This Gana-pati (Ganesha) embodies all three Gods. 'Tuka' (ram) says: this is spoken by the Vedas, the Puranas and is gathered from VYASA."[27]

The cult of Ganesh predominated in West, Central and South India and the Brahmins from this area alone are qualified for the stewardship of Shiva temples from Nepal to Rameshwaram.

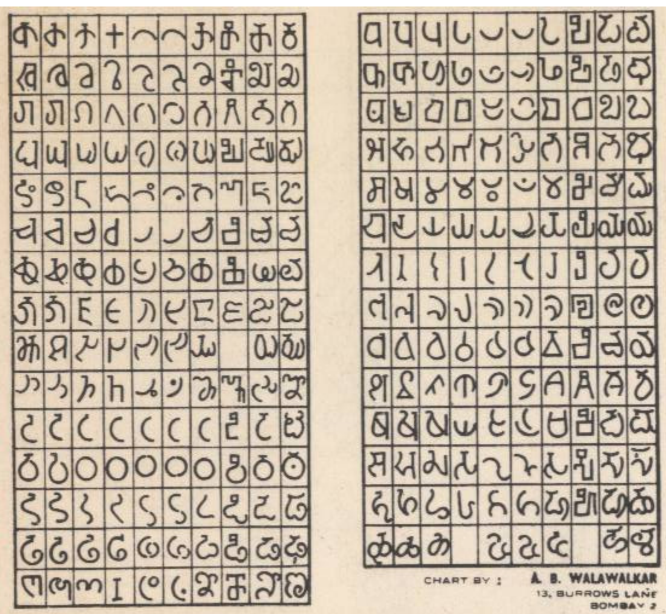


TEXTUAL REFERENCES TO SCRIPTOLOGY

Graphics of the three letters GA-NE-SHA are distinct from the rest of Devanagari consonants though they do not appear so in Brahmi and Grantham. These are the only three letters in which the consonant part is shown detached from its Vowel part.

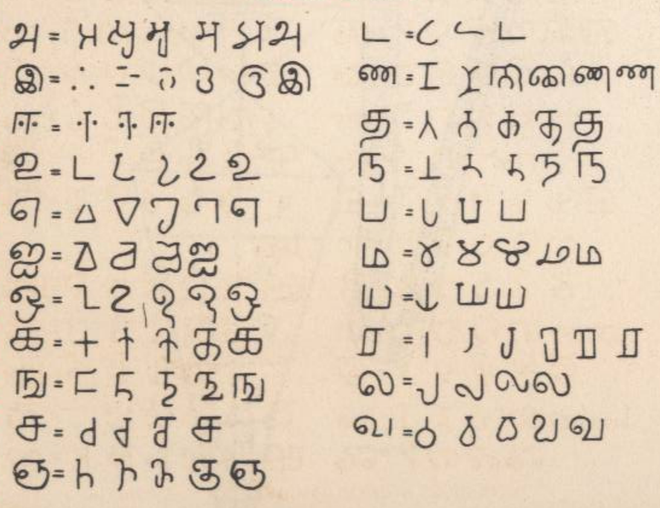
Some ignorant Western Scholars go to the extent of making sweeping remarks such as : 'The extensive Vedic Literature gives no indication whatsoever of the existence of writing in early Aryan India...... Writing is never mentioned. Among the Ancient Indian divinities there was no god of 'writing', but there was Saraswati, the goddess of knowledge, learning and eloquence' (David Diringer, Alphabet, p. 329).

Actually marking or writing is mentioned as 'visible speech' in Rig Veda (10.71.4), numbers (RV 10.62.7), Gambler's marks (RV 1.41.9), Gambler's poem (RV 10.34), Prosody (RV 10.14.16; 10.132.3.4); various metres are mentioned in Yajurveda Samhita (Vajasneyi) 10.8, 14.19, 23.33, 28.14, etc... Atharva Veda clearly mentions 'writing' of monetary accounts (7.50(52).5), of Texts of Veda replaced in a box (19.72—Whitney's **Atharva Veda**, p. 39).



Evolution of Brahmi in North India (Devanagari) and South India (Kanarese)

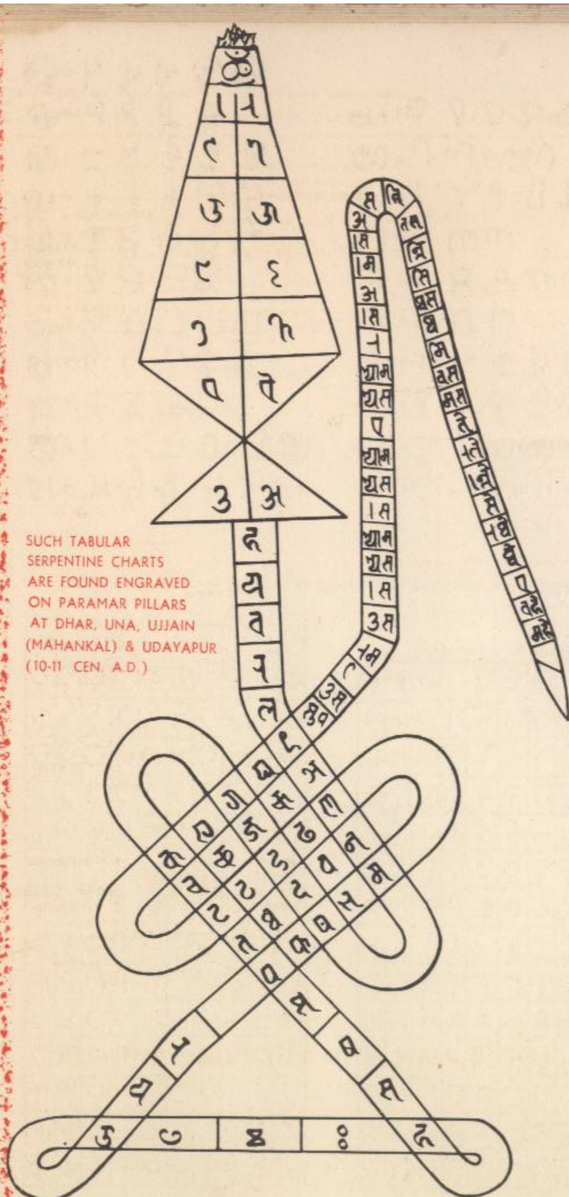
EVOLUTION OF TAMIL



Numerical digits from '1 to 10^{12}' are mentioned in Yaju (Vaj. Samh.) Sacrificial hymn (17.2) and in Taittareeya Samhita (4.40.114; 7.2.20.1), Maitrayani Samhita (2.8.4), Kathaka Samhita (39.6). List of letters in the Vedas is mentioned in Shatapatha Brahmana (12.3.2.1).

Alphabets (Akshara) and forms of Vowels i-u-e in colour are mentioned in Chandogya Upanishad (2.10, 1.13, 2.22.3); Vowels and their 'Matras' are mentioned in Taittareeya Upanishad (1.1); sibilants-plosives-vowels and semivowels in Aitareya Aranyaka (3.2.1), unvoiced consonants and voiced in A.A. (2.2.4), differentiation of Ṇ and Ṣ (lingual) from N and S (dental) in A.A. (3.2.6). Conjugation is mentioned in A.A. (3.1.5) and Shankhayana Aranyaka. The formation of mystic AUM from A, U and M is mentioned in Aitareya Brahmana (5.32), Kaushitaki Brahmana (26.5) and Ashwalayana Shrouta-Sootra (10.4). Singular and Plural Numbers are mentioned in Shatapatha Brahmana (13.5.1,18) and Three Genders in Sh. Br. (10.5.1.2; 10.5.1.3).

These references establish the existence of Vedic Grammar; the Science of pronunciation is called 'Shiksha' and is one of the Six appendages to Veda. Yaska, the author of the Vedic grammar NIRUKTA, mentions names of earlier grammarians as Audumbarayana, Kraushtuki, Shatabalaaksha, Mauggalya, Shaakpooni, Shaakatayana, Sthaulashtheevee, Agraayana, Aupamanyava, Aurnavaabha, Kathakya, Kautsa, Gargya, Gaalava, Charmashirasa, Taiteeki, Warshyayani and Shakalya. Later grammarians are Apishali, Sphotayana, Bharadwaja, Kashyapa, Chaakravarmana, Senaka,



SUCH TABULAR SERPENTINE CHARTS ARE FOUND ENGRAVED ON PARAMAR PILLARS AT DHAR, UNA, UJJAIN (MAHANKAL) & UDAYAPUR (10-11 CEN. A.D.)

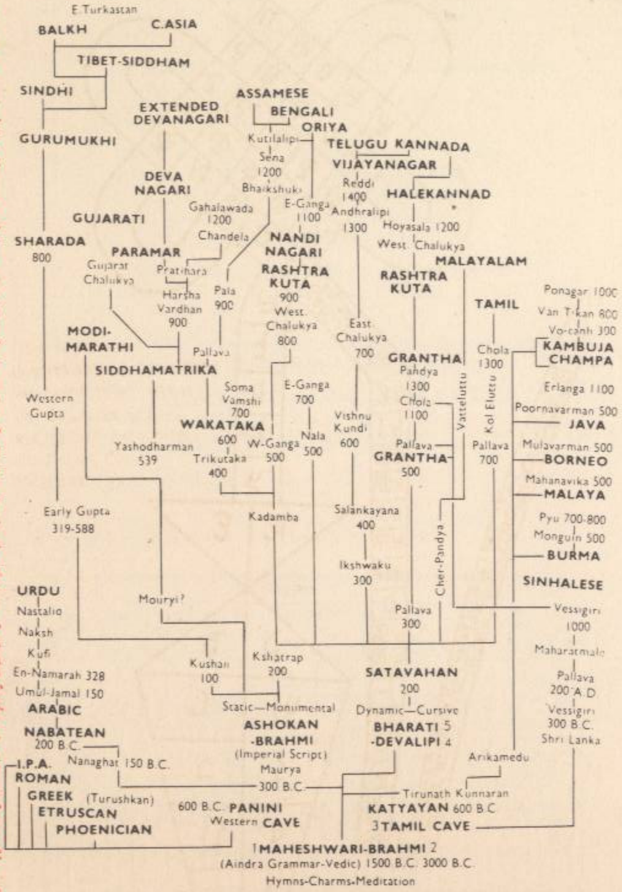
Panini, Patanjali, Katyayana, Dakshayana, Vyadi, Bhartrihari, Bhoja, and many others.

2. Like the foregoing description of AUM, we observe a graphic description of the mode of drawing, particularly, the vowels, in the Padma Purana :

> The intelligent Yajurvedi, with special devotion reveres BOOKS, which are written on palm-leaves with the auspicious Divine Script, (Deva Lipi). AUM, the mystic sign, is written immediately after the two marginal lines nearest to the binding place (where the string or ring is 'nserted). Aum the Pranava-sign is to be written on the first line. After it a single vertibar line is drawn, from the top of which hangs a triangular figure, making the 'A'-form. With a perpendicular line added, it becomes 'Aa'-form; two circles and a sign like six leftwards makes the well-known 'I' form. Drawing a long line from top leftwards creates the 'Ee'-form. A straight top line is essential over all Letters, with the exception of the mystic A-U-M. Thereafter a long line ending with a whip makes the well-known 'U'-form; and with two whips makes the 'Oo'-form. In this manner all other Letters in Bharati-Script are written; the writing of the Puranas thus is only valid and worthy of reverence.[28]

3. A clear reference to the vertibar in the graphic structure of letters is found in the Bhagavad Gita, which is a part of VYASA's Mahabharat, where the LORD says: 'I am the A-sign among all letters' (Bhagavad Gita, 10.33).[29] In the earlier Brahmi Script this A-kar was phonetically assumed but was not drawn so clearly, but in proto-Nagari it became more distinct; this ultimately became very dominant in Nandinagari-Devanagari.

SOUTH-ASIAN SCRIPTS OF THE BRAHMI FAMILY OF SCRIPTS



1 Pannavana Sutra. 2 Jaina-Bhagavati Sutra, Lalitavistara 3 Lalitavistara
4 Padmapurana, Lalitavistara. 5 Amara-kosha Padmapurana

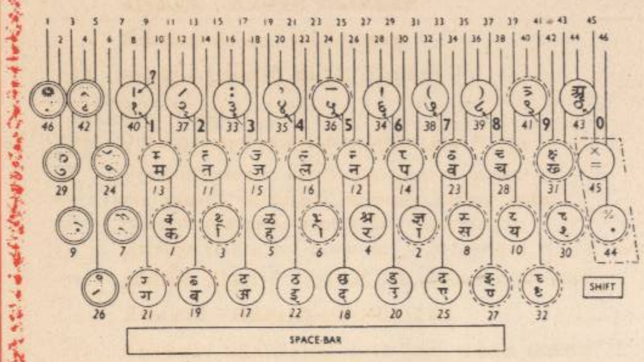
In Amara-Kosha 'Brahmi' is quoted as synonymous with 'Bharati' (Amar-Kosha, 1.5.1),[30] whereas in the Padma Purana 'Bharati' is also called the 'Script of the Gods'.

4. The sign-list consists mainly of 'Vowels' beginning from 'A' and ending in 'X', called **'A-X-Mala'** in 'Ṛudra-Yamala-Tantra', which says: 'Oh, A-X-Mala born of Hymns, thou travellest beyond Rivers, beyond Islands, beyond Nations'.[31] This citation is, by now, substantiated by enough epigraphic evidence (see the Evolution Chart of South-Asian Scripts p. 8).
   In the early Latin Script, too, the sign-list consisted of A to X only, Y and Z being added in Cicero's time (1st Cen. B.C).

Careful observation shows that Nandinagari designers had discarded the Asokan Brahmi Forms. Dr. Vasudev Sharan Agrawal pointed out that Scriptologists in Nandinagar (Modern Nander in Deccan, the Capital of Vakatakas and later of Rashtrakutas), of South India evolved the NANDI-NAGARI letter-forms; these were adopted in North India by the Guptas. A newly discovered drama 'Pada Taaditakam' speaks of Pataliputra as 'Nagara' and Gupta inscriptions inform that 'Deva' was the personal name of Chandragupta II Vikramaditya hence the name: 'DEVA-NAGARI'. Dr. Agrawal also emphasises that 'another important point to be noted here is that the script was first developed elaborately in the Deccan in the 8th Century, and then in the Northern India by about the 10th Century' (see Indian Systems of Writing, Government of India Publication, Delhi, 1966, p. 14).

STRUCTURAL ELEMENTS OF THE INDIAN SCRIPTS

Having briefly disclosed the historical evidence for the existence of a rationale for transcription of sound into letter-form we now proceed (based again on the major works mentioned in this text,



Above Keyboard (1965) was jointly evolved in New Delhi, by the Ministry of Education, Govt. of India, Central Hindi Directorate and the Ad-hoc Committee of the Govt. of Maharashtra. (Present author was a member of the last Committee)



the Maheshwari Sutra; Ganesa Atharvana Sheersha and the Paninian phonemic classification) to illustrate the basic elements of the alphabet. The structural elements are as under :

(a) inherent vertibar in every letter;

(b) the cursive crescent form in all letters based on impact of the Shiva's Drumlet Arcs;

(c) top line to appear on all letters except the mystic 'Aum'; and

(d) the Matra, the representative Vowel marks which modify consonants and conjuncts to produce "syllables"

(a) Mention of the inherent Vertibar in every letter by Lord Krishna in his Geeta, graphically pinpoints existence of the A Vowel Sound in every Bharati or Devanagari letter; graphically the vertibar appears in three forms :—

Mid bar : क, फ; as initial half of a conjunct they appear as क्, फ्,

Top-bar : इ, उ, ङ, छ, ट, ठ, ड, ढ, द, र, ल, ह, ळ. Forms for the initial half are produced by adding the Halant (plough sign) ङ्, छ्, ट्, ठ्, ड्, ढ्, द्, र्, ह्, ळ् etc.

End-bar : ख, ग, घ, च, ज, झ, ञ, ण, त, थ, ध, न, प, ब, भ, म, य, ल, व, श, ष, स, क्ष, ज्ञ, श्र, त्र; Initial half forms for conjunct formation are created by removing the Vertibar (पाई) at the end e.g.
ख् ग् घ् च् ज् झ् ञ् ण् त् थ् ध् न् प् ब् भ् म् य् ल् व् श् ष् स् क्ष् ज्ञ् श्र् त्र्

(b) 1. As mentioned in Ganapati-Atharvana Sheersha, all letters have 'Crescents' (Ardhendu-Lasitam).

The structural 'Crescents' of the mother-script Maheshwari Brahmi exhibit as schematic a graphic form, as are evidenced in the Phonetic classification by Panini.

The icon of Shiva holds a crescent (Half-moon) on the head as a proud emblem. Vageeshwari Saraswati (Goddess of Speech-literature) is also depicted with a crescent on her head.[32]

2. In the Chart on p. 11, the horizontal order of 'Phonetic Graphemes (Varnas) is distinctive. Vertical columns exhibit another graphic characteristic, 'Crescental Categories' (Samjnya)'.

   1st column letters have only one basic crescent.

   2nd column letters have one crescent and one Aspirate sign attached.

   3rd column letters have two basic crescents.

   4th column letters have two basic plus one Aspirate sign attached.

   5th column of Nasal letters are formed by adding a circle (Nasal sign) to the Basic Crescent of first column.

(c) As pointed out in the Padma-Purana, the Top-line should be placed on every letter except the mystic AU.

(d) Matras—It is one thing to pronounce a pure vowel and it is functionally quite another when it modifies one or more consonants and this function is distinctively depicted by special signs called 'Matras', which float outside the normal alignment of letters.

Matra-concept is a typically Indian device. 'Musical theory and theory of language had been considered from the earliest times as two parallel branches of one general science of sound. Both had often been codified by the same writers (e.g. Vashishtha, Yajnyavalkya, Narada, Kashyapa, Panini, Nandikeshwara, Patanjali, etc.). Philosophy of music is explained

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13. 'अंकानाम् वामतो गतिः'
14. V. Kannaiyan, *SCRIPTS in and around India*, Madras, 1960, p.1.
15. नृत्तावसाने नटराजराजो ननाद ढक्कां नवपंच वारम् । उद्धर्तुकाम : **सनकादिसिद्धान्** एतद्विमर्षे **शिवसूत्र** जालम् ॥ (During the dancing inter-lude Nataraja struck his drum-let 'nine-plus-five' (14) times, creating the Shiva-Sootra, for preservation (of Vedas), in answer to prayers from Sages including Sanaka, etc.), See *Kashika Sootra, I.*
16. Alain Danielu, *Hindu Polytheism*, 1966, p. 219
17. *Ibid.*, p. 207
18. गणादीं पूर्वमुच्चार्य वर्णादीं तदनंतरम् । अनुस्वारः पर तरः अर्धेंदुलसितम् । तारेणरुद्धं । एतत्तवम् **अनुस्वरूपम्** ।

'**ग-कारः** पूर्वरूपम् । **अ-कारो** मध्यमरूपम् ।
अनुस्वारश्चांत्यरूपम् । **बिंदुरुत्तर** रूपम् । नाद :
संधानम्, संहिता:, संधि:, सा एषा **गणेशविद्या** ।'
......इदमथर्वशीर्षम् अशिष्याय न देयम् ।
यो यदि मोहात् दास्यति स पापियान् भवति ।

19. 'वाग्वै पुरा अव्याकृता वदत्ते देवा इंद्रमब्रुवन्निमां वाचं व्याकुर्वीति । तामिंद्रो मध्यतोऽवक्रम्य व्याकरोत्तस्मादियं व्याकृतावाग् उद्यते', तैत्तरीय सं.७.४.

20. 'विजामातेति शश्वद् दाक्षिणाजाः कृतार्यति आचक्षते', निरुक्त, ६.९.

21. 'प्रिय तद्हिताः दाक्षिणात्याः'

22. 'निष्कर्षंतु ब्रह्मैव स्फोटः', वैय्याकरण भूषण, कारिका ४.

23. 'ओमित्येकाक्षरं ब्रह्म ओमित्येदक्षरमुद्गीथमुपासीत्', छांदोग्य १.१.

24. Alain Danièlou, *Hindu Polytheism*, p. 293

25. ॐ नमोजी आद्या । वेद प्रतिपाद्या ।
जय स्वसंवेद्या । आत्मरूपा ॥१॥
देवा **तूंची गणेशु** । सकळार्थप्रकाशु ।
म्हणे निवृत्तिदासु । अवधारिजो ॥२॥
हे शद्ब ब्रह्म अशेष । **तेंचि मूर्ति सुरेख** ।
जेथें वर्ण-वपु निर्दोष । मिरवत असे ॥३॥
अ-कार चरण युगुल । **उ-कार** उदरविशाल ।
म-कार महामंडळ । मस्तकाकारे ॥१९॥
हे तिन्ही एकवटले । तेच शद्बब्रह्म कवळले ।
ते मियां गुरुकृपा नमिले । आदिबीज ॥२०॥ अ० १॥

26. अक्षरामाझि विशदु । **अ-कारू** तो मी ॥२४९॥
—अध्याय १० ॥ज्ञानेश्वरी॥

27. ॐ कार स्वरूप । गणेशाचे रूप । जो तीन्ही देवांचे ।
जन्मस्थान ॥१॥ **अ-कार** तो ब्रह्मा । **उ-कार** तो विष्णु ।
म-कार महेश्वर । ऐसे जाण ॥२॥ ऐसे तीन्ही देव । **गणेश** व्युत्पत्ति ।

on the basis of Maheshwara-Sootras in Rudra-Damarudbhava-Sutra-Vivarana.'[35]

In scriptology the 'Matra' is a power-representing or modifying sign which originates from the sovereign 'VOWELS', just as in musical notations the 'Matra represents a Time Unit which is one-third time of a normal human being's pulse-beat'.[36]

THE NATIONAL TREND

For obtaining brevity in the number of signs, without much sacrifice of 'phonetic' values, the TAMIL script shows us the way; in Tamil the (1) first sign of a phonetic class, say क also suffices for (2) its 'soft aspirate' ख, (3) the relative 'hard consonant' ग and (4) the 'hard aspirate' घ, the correct reading being accomplished by the foreknowledge of the language for the correct derivatives; this innovation came into vogue between the 13th and the 16th century from Grantham (Kol-Ellettu style), which had developed from the earlier Satawahana-Bharati (Devalipi). Bharati is the parent of the Nandinagari of the 7th century (adapted in the North as Devanagari). The Tamil Language, however, is very ancient, but its wisdom is confined today to a relatively small sector and it is envisaged that adopting Devanagari script for printing Tamil, Malayalam, Telugu, Kannada, Bengali Urdu, etc., will help spread their popularity to larger populations spread over India and beyond, just as the adaptation of the Roman Script threw open the valuable German literature to a wider readership in the post-War decades.

The Ministry of Education, Government of India, has issued a publication called 'EXTENDED DEVANAGARI (11/1967), which takes an uptodate review of the movement for a common all-India script, incorporating specific signs for special sounds occurring in Kashmiri, Sindhi, Tamil, Malayalam, Kannada,

तो हा गणपति। महाराज ॥३॥ 'तुका'म्हणे वेद।
बोलीलो पुराणी। ध्यावे निवटोनी। व्यासाचिये ॥४॥

28. 'यजुर्वेदी विशेषेण पूजयेत्पुस्तकं सुधीः।
श्री तालपत्र लिखितं देवलिप्यंन्वितं शुभम् ॥४४॥
बंधाद्यंति पचं पट्टयुगुलात् **प्रणवाक्षरं**।
प्रागूर्ध्वं रेखयोः प्रान्ते प्रणवस्याग्र योजिका ॥४५॥
रेखैंकातुभवेदेवम् **अ-कार**स्तस्य पार्श्वतः।
शिरोभागमुपक्रम्य सकोणाधः प्रलम्बिनी ॥४६॥
आकारः सहिविज्ञेयः पट्टिकादक्षरेखयाः।
वामे षड् वक्रबिंदु द्वौ **इ-कार** इतिकीर्तितः ॥४७॥
तस्य वामे शिरोरेखालंबिन्या **ई**-उदाहृतः।
सर्वाक्षरे शिरोरेखा अवक्रा प्रणवं विना ॥४८॥
तस्यांतु लंबरेखायात् तदंतोच लवित्रवत्।
उ-कारः सहिविख्यातो, लवित्र द्वय तस्तद् **ऊ** ॥४९॥
एवमन्यानि सर्वाणि अक्षरण्याह भारती–
लिप्याऽन यैव लिखितं पुराणं तु प्रशस्यते ॥५०॥
—पद्मपुराण, पातालखंड. अ. १००, **शिव**राघव संवाद.

29. 'अक्षराणाम् **अ**-कारोऽस्मि', भगवद्गीता, अ. १०, श्लो. २३.

30. 'ब्राह्मी तु भारती' **अमर** कोश. १.५.१.

31. मंत्रमातृके अ-क्ष-माले नद्यंतरं यासि देशांतरं **यासि**
द्वीपांतरं यासि,–**रुद्रयामलतंत्र**

32. **चंद्रार्धा चितशेखरां** कलिमलेनालोल नेत्रद्वयाम्...
आद्यां यौवनगर्वितां **लिपितनूम् वागीश्वरी**माश्रये॥
—श्रीविद्यानृसिहभारतीस्वामी, श्रीचंडिकोपास्तिदीपिका.

33. Alain Danielou, '*Northern Indian Music—Theory and Technique*', London, 1949, p. 33.

34. *Ibid*, p. 17.

Telugu and Urdu (Persianised) languages. If our people must benefit from knowledge, regardless of language, a national phonetic script must be adopted urgently, without arousing, wounding or exciting regional passions.

MECHANICAL COMPOSING AND PHONOGRAPHY

The Indian scripts have been installed on modern composing equipment like the Typewriter, Varityper and Electric typewriters, Monotype, Linotype and will soon be put on the Photosetters. The Computer-automation calls for systems which are logical, rational and functional. It has been shown that, although lost in time, a search into the ancient forms of alphabets of various countries reveals that behind the shapes of letter-forms belonging to a specific 'phonetic' group there stands a 'phonographic law' by which the 'Graphic' shapes of letters of the group exhibit a similarity of form. The Pitman's system of speed writing or 'short-hand', which was advocated as a welcome step by Eric Gill as 'something which reasonably presents the sounds' is a laudable effort in evolving a world-phonography.

It is but natural that in every developed field of science the signary should be larger than the crude alphabet of just 26-letter Roman for the English language. For French, Spanish, German, Slav or Russian the signary is much larger.

Since ages past, Phonography or 'Ganesha-Vidya' was evolved as the traditional Indian approach to a phonetic script laying the foundation of a rational art of Speech-communication, a 'Scriptology'—translating 'SOUND' into Graphic 'FORM' and it provides to the inventive designer a tool to relate graphic-drawings to phonetic precision.

END

THE STRUCTURAL ELEMENTS OF DEVANAGARI SCRIPT

[BASED ON PRINCIPLES DEDUCED BY A. B. WALAWALKAR IN 'PRE-ASHOKAN BRAHMI']

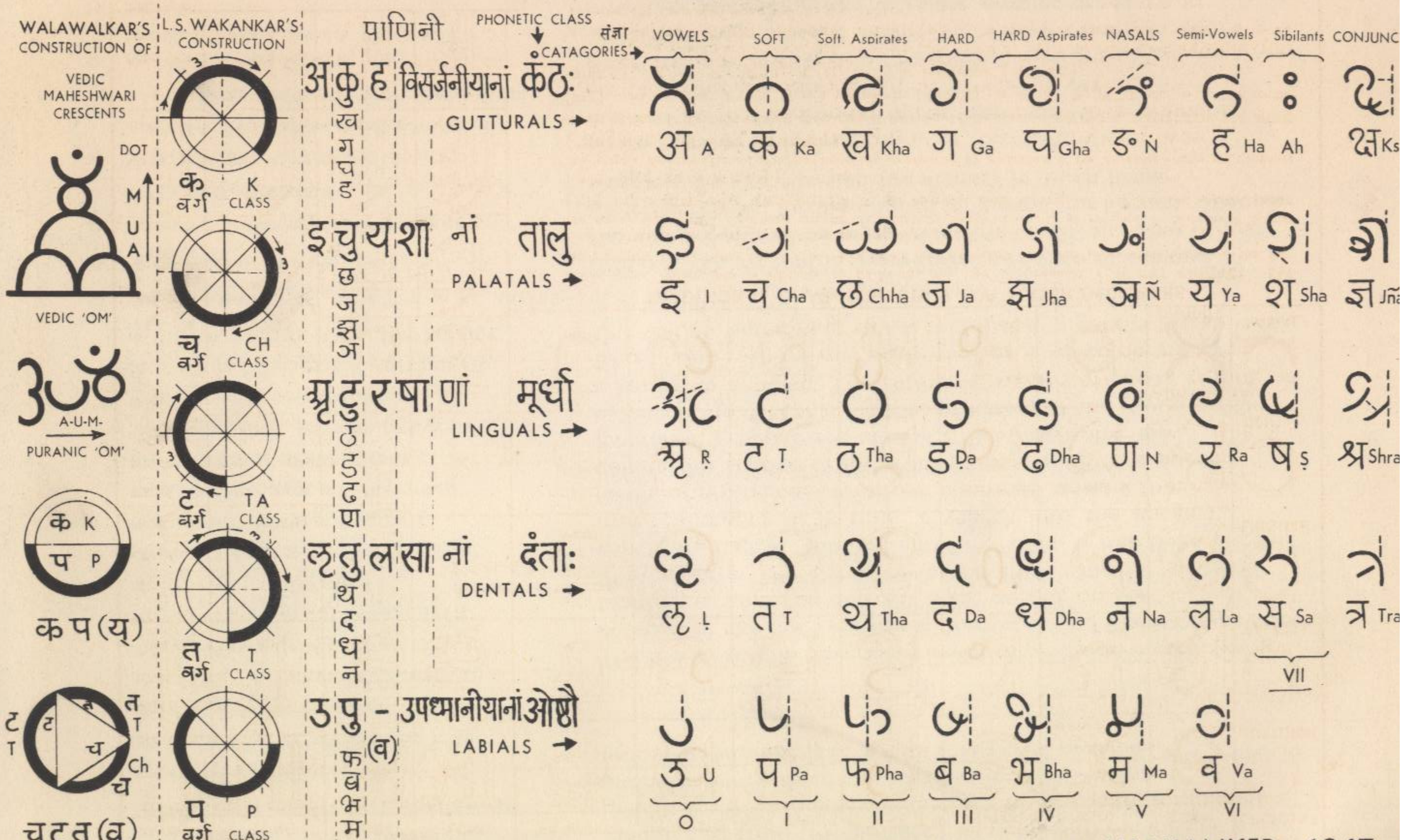
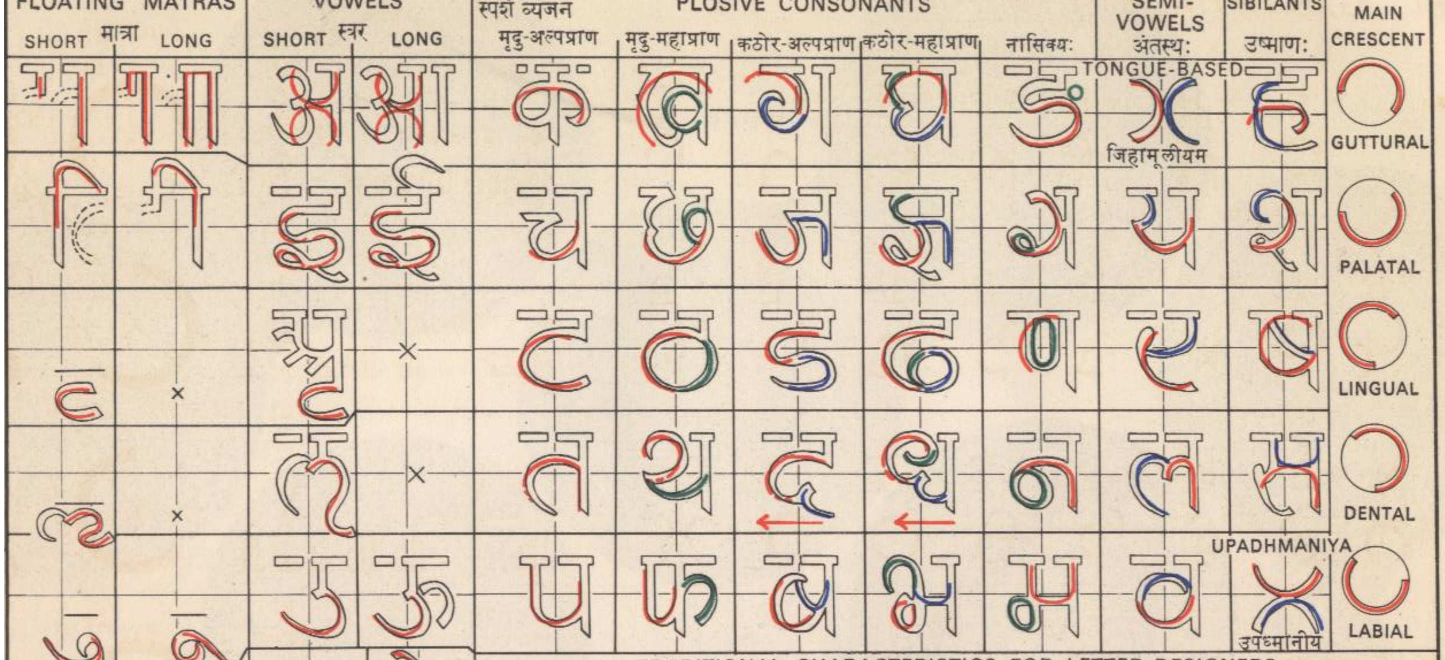
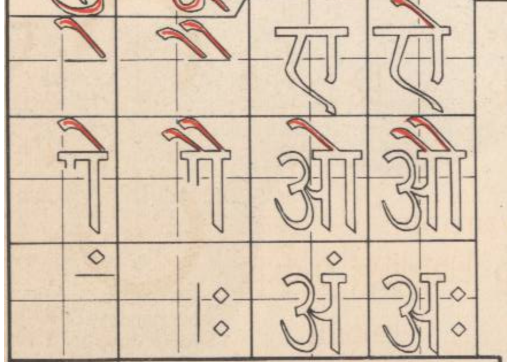


Chart Made by: L. S. WAKANKER, 1967.

GRAPHIC 'RATIONALE' IN LETTER-DESIGN OF DEVANAGARI





TRADITIONAL CHARACTERISTICS FOR LETTER-DESIGNERS

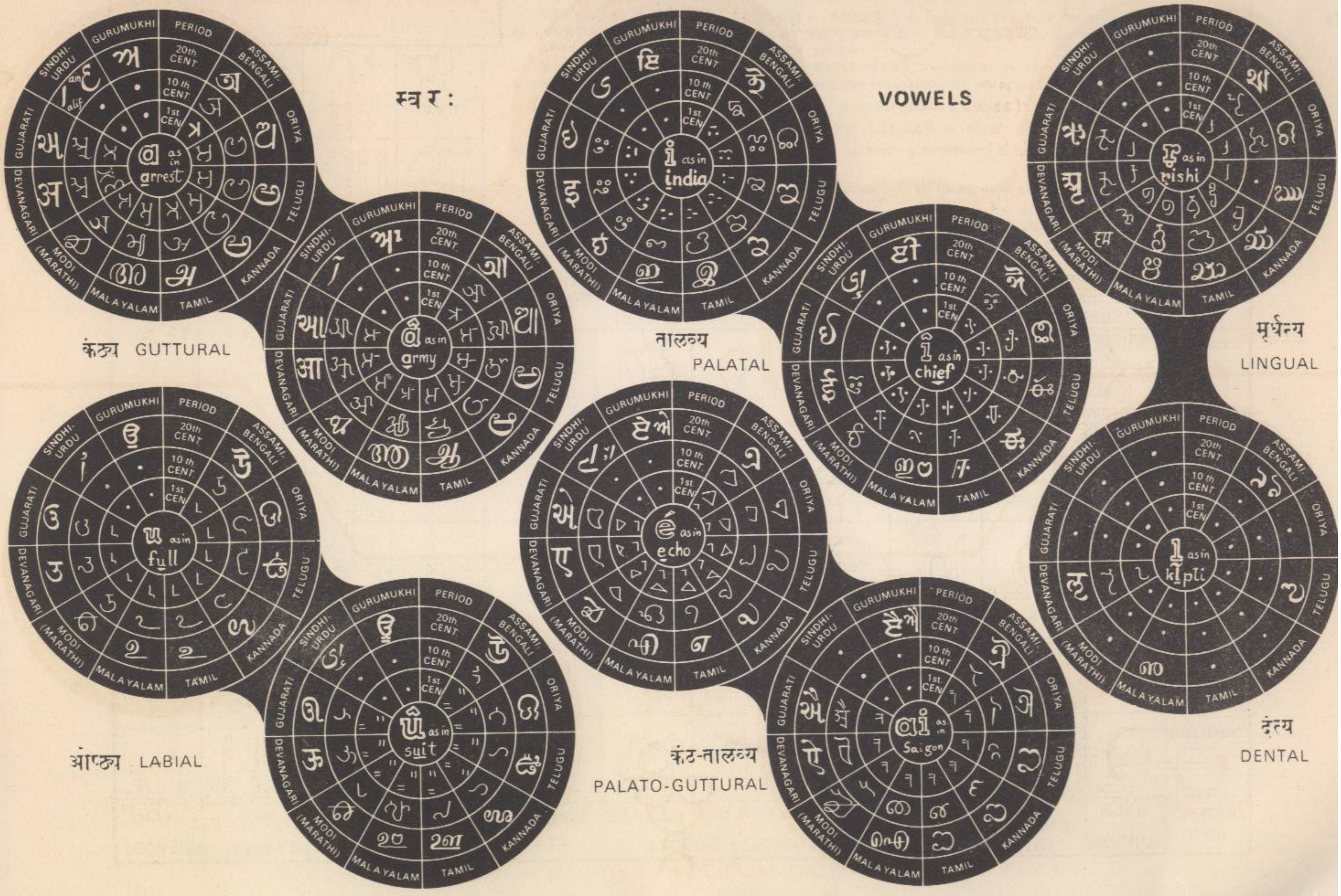
1. Brahmi-Nagari *Phonography* is attributed to *Ga-Ne-Sha*, the Lord of Categories ('स एषा गणेशविद्या', इति अथर्वणशीर्षम्); the THREE letters in the name of the Lord are distinct from other letters of the Alphabet in that they have the 'Vertibar' detached from the 'consonantal element', *i.e.* ग, ण, श.
2. The 'vertical order' in the above table consists of *'graphically similar'* structure, as indicated in Maheshwari Sootras (इति माहेश्वराणिसूत्राणि अनादिसंज्ञार्थानी); the 'horizontal order' confirms with the Paninian 'phonetic' groups (तुल्य आस्य प्रयत्नं स वर्णम्).).
3. The 'graphic' structure of letters of differen torder can be identified by the pattern of the *'crescents'*—main and subsidiary ('अर्धेंदुलसितं' इति गणेश अथर्वशीर्षम्).
4. Vertibar (A-sign) is the most essential component of Devanagari Phonography (अक्षराणाम् अ-कारोऽस्मि' इति भगवद् गीता); the A-sign in क and फ is a Mid-vertibar (मध्यदंड), in ट, ठ, ड, ह, द etc., is a Top-vertibar (शीर्षदंड); क, च, ण, त, प, य, श, etc., is an End-Vertibar (अंत्य-दंड).
5. The Top-Line is a structural function of each Devanagari Letter, except the sign of the mystic ॐ ('सर्वाक्षरे शिरोरेखा अवक्रा प्रणवंविना–पद्मपुराण, पातालखंड, अध्याय १००); in contrast to Roman letters which align by the 'base-line', the Devanagari letters align by the 'Top-line'.
6. 'Matras', or the 'floating Vowel-Signs' are the unique feature of all scripts of the Brahmi-Nagari Family; they help to create a Vowel-modulating Series (स्वराक्षरी or बाराखडी) of consonants, as well as, conjuncts.

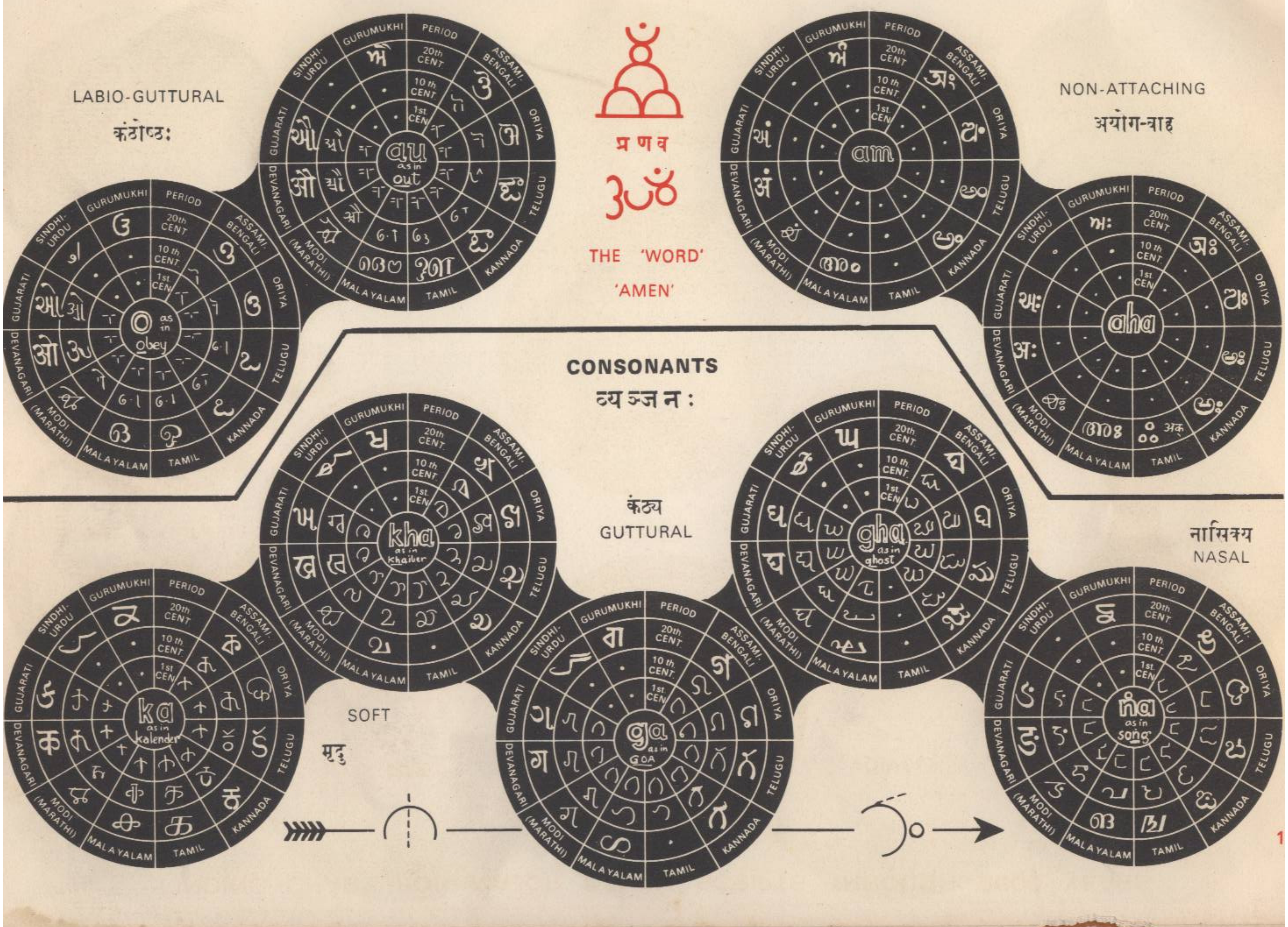
ल.व्धुश्री.शावाशुकल्पेप्रणतिकोऽकरोत्वरः

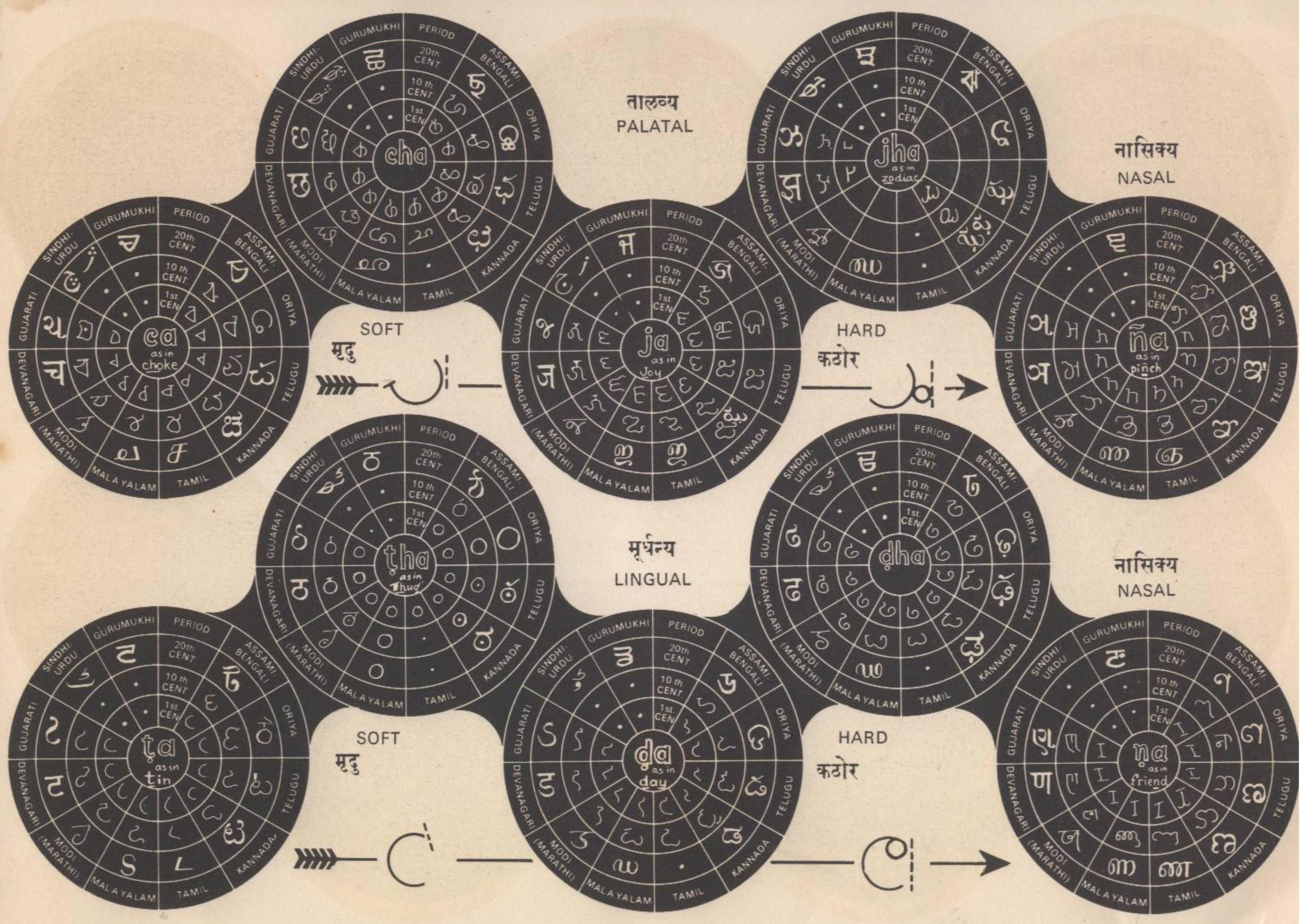
BASED ON A. B. WALAWALKAR'S *'PRE-ASHOKAN BRAHMI'*

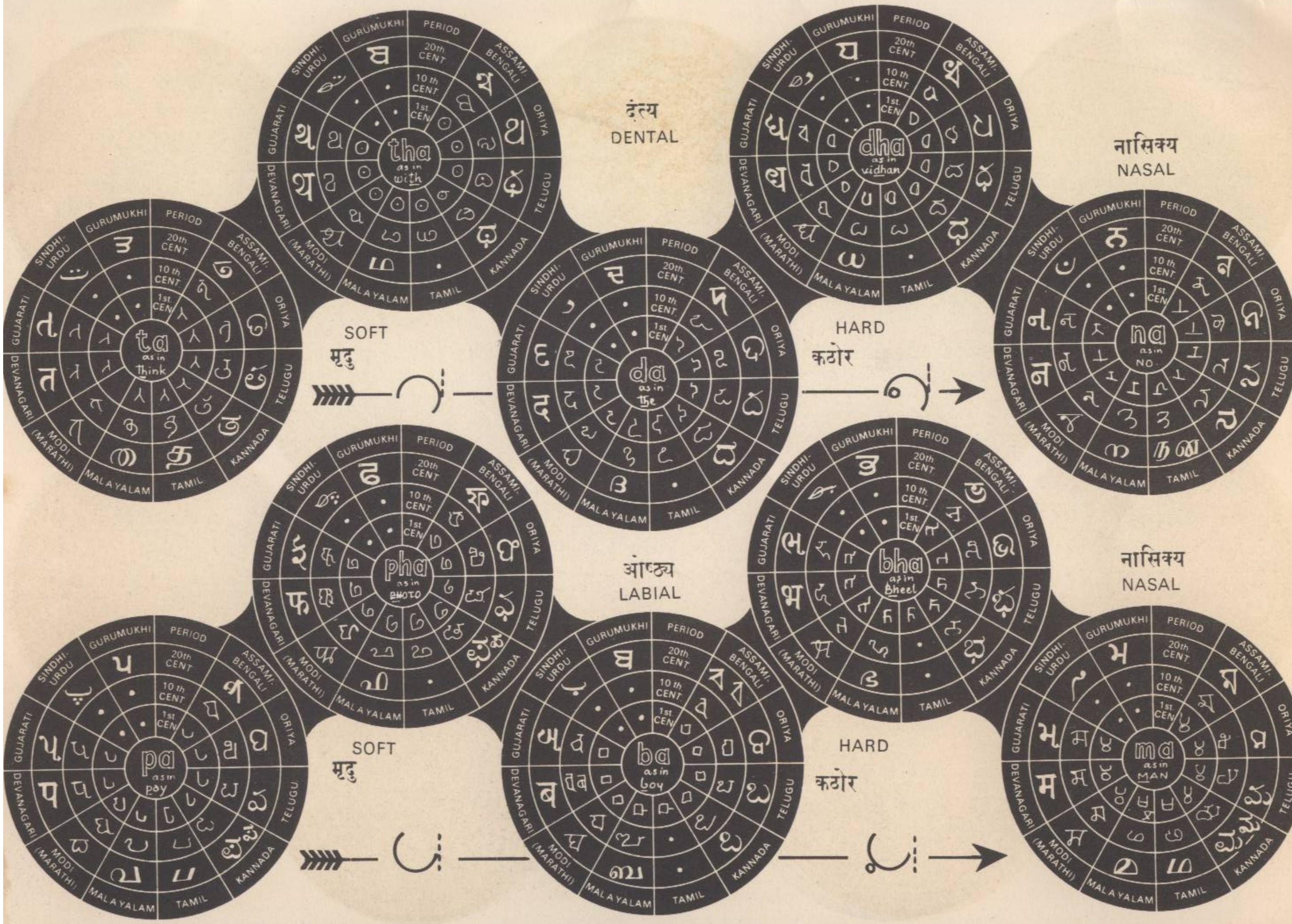
THIS CHART IS DESIGNED BY L. S. WAKANKER, BOMBAY 4, 1968

FINDING—CHART FOR MAJOR INDIAN SCRIPTS THROUGH 2000 YEARS

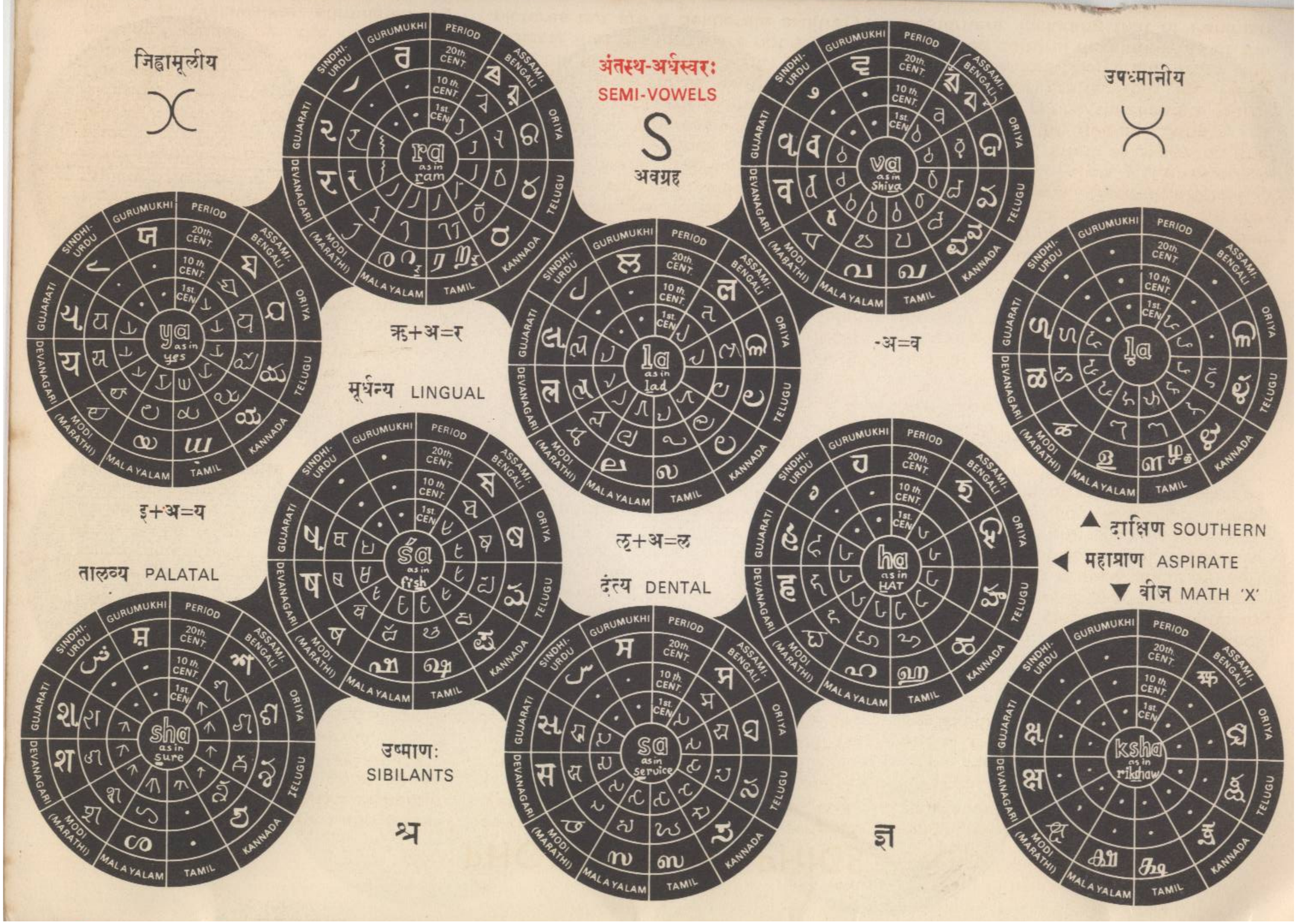



LABIO-GUTTURAL
कंठोष्ठः
प्रणव
THE 'WORD'
'AMEN'
NON-ATTACHING
अयोग-वाह
CONSONANTS
व्यञ्जनः
कंठ्य
GUTTURAL
नासिक्य
NASAL
SOFT
मृदु
o as in obey
au as in out
am
aha
kha as in Khaiber
gha as in ghost
ka as in kalender
ga as in GOA
ṅa as in song
GURUMUKHI
PERIOD
20th CENT.
10 th CENT.
1st. CEN.
ASSAMI-BENGALI
ORIYA
TELUGU
KANNADA
TAMIL
MALAYALAM
MODI (MARATHI)
DEVANAGARI
GUJARATI
SINDHI-URDU


तालव्य
PALATAL
नासिक्य
NASAL
SOFT
मृदु
HARD
कठोर
cha
jha
as in
zodiac
ca
as in
choke
ja
as in
Joy
ña
as in
pinch
मूर्धन्य
LINGUAL
नासिक्य
NASAL
ṭha
as in
Thug
ḍha
SOFT
मृदु
HARD
कठोर
ṭa
as in
tin
ḍa
as in
day
ṇa
as in
friend
GURUMUKHI
PERIOD
20th CENT.
10 th CENT.
1st CEN.
ASSAMI-BENGALI
ORIYA
TELUGU
KANNADA
TAMIL
MALAYALAM
MODI (MARATHI)
DEVANAGARI
GUJARATI
SINDHI-URDU



दंत्य
DENTAL
नासिक्य
NASAL
SOFT
मृदु
HARD
कठोर
ओष्ठ्य
LABIAL
नासिक्य
NASAL
tha as in with
dha as in vidhan
ta as in Think
da as in The
na as in NO
pha as in PHOTO
bha as in Bheel
pa as in pay
ba as in boy
ma as in MAN
GURUMUKHI
PERIOD
ASSAMI-BENGALI
ORIYA
TELUGU
KANNADA
TAMIL
MALAYALAM
MODI (MARATHI)
DEVANAGARI
GUJARATI
SINDHI-URDU
20th CENT.
10th CENT.
1st CEN.



जिह्वामूलीय
अंतस्थ-अर्धस्वर:
SEMI-VOWELS
अवग्रह
उपध्मानीय
ऋ+अ=र
-अ=व
मूर्धन्य LINGUAL
इ+अ=य
ऌ+अ=ल
तालव्य PALATAL
दंत्य DENTAL
▲ दाक्षिण SOUTHERN
◀ महाप्राण ASPIRATE
▼ बीज MATH 'X'
उष्माण:
SIBILANTS
श्र
ज्ञ
ra as in ram
va as in Shiva
ya as in yes
la as in lad
ḷa
śa as in fish
ha as in HAT
sha as in sure
sa as in service
ksha as in rikshaw
GURUMUKHI
PERIOD
20th. CENT.
10 th. CENT.
1st. CEN
ASSAMI. BENGALI
ORIYA
TELUGU
KANNADA
TAMIL
MALAYALAM
MODI (MARATHI)
DEVANAGARI
GUJARATI
SINDHI-URDU

PHONETIC GRAPHICS

Can we observe in the Latin letter-forms a 'Periodic' rationale, wherein graphic properties can recur as in Musical Octaves or the Mendeleff's Periodic Table of chemical elements? (They are so seen in the Brahmi-Family of Indian and further Indian scripts).

If so, can it be a part of some law with which the ancients were familiar but which was lost during the course of the last few thousand years?

Can we, the letter-designers of this technical century, take an inspiration from those fragmental remnants and utilise the idea for rationalising a new series of alphabets by synchronising it with the requirements of the computer-automation?

Can we lay the foundation of a rational science of speech-communication—a new SCRIPTOLOGY?

EARLIER OBSERVATIONS

Long back in 1949, when I was the official Calligrapher to the Marathi-Gujarati Script Reform Committee of the then Government of Bombay (Chairman : Kakasaheb Kalelkar), I was asked by the Chairman to provide illustrations of Brahmi Letters for ascertaining, therefrom, how the present letter-forms were evolved. Immediately after, I had attended an interesting talk by Dr. S. Mahdi Hassan, on 'Graphic elements in Verti-Bar-less Devanagari Letters of similar phonetic value'; the closing remarks on that evening, made by the epigraphist Mr. A. B. Walawalkar, stimulated my study in relative phonetic letters. Very soon I published in **United Asia** (1951, Vol. III, No. 41) my observations on "Origin of the (Koranic) Arabic script from Indian (Girnar) Brahmi-letters", and had the privilege of writing a critical preface to Mr. Walawalkar's thought-provoking **"Pre-Ashokan Brahmi"**, which had referred to the subject of phonetic groups that were first observed by L. A. Wadell (in his **'Aryan origin of the Alphabet'**, 1927). I developed the analysis in my talks that I gave to my audience in my European study tour in 1962 (see Table A); further observations are now presented to keen students of scripts for a critical appraisal.

SEARCH-LIGHT ON FORMS

Script-historians attribute that the western alphabets are the end-product of the evolution of word-pictures or 'Pictograms'. Such conclusion appears true in case of very few signs; critical comparison of Senai-Pictographs and the letters of the Moab (Semetic) letters show that case may be much different (note figures in Table 'C'). Letter names have remained in the ancient order but the forms appear to be influenced by the Eastern scripts in which characters from the same phonetic group do have common graphic elements (see Table 'B'). Whereas the western scribes are not mentioned to have designed letter-forms with phonetic bias, the forms from 900 B.C. onwards indicate that the forms are not stylised pictures but are a deliberate arbitrary design, which is more true of the Eastern letters like the Indus Seal letters or the Kharoshthi signary.

The Hindus were very much advanced in the linguistic and graphic speculations, right since the time of the Vedas. Panini himself, who lived 2500 years or more ago, refers to Yaska and many other older grammarians. Brahmi-Nagari script exhibits exact reflexes of the elaborate and critically analysed scheme of Graphemes, representing graphic groups such as soft and hard plosives, their respective aspirate-forms and nasal-derivatives, vowels and their semivowel-derivatives, different forms of sibilants, enormous number of conjuncts, and, the most ingenious of all, the vowelisation series of signs that modulate these Phonemes (see Table B).

In early days Princep, Weber, Buehler, and others speculated variously on the antiquity and origin of the Brahmi, but their speculations were laid to rest after the find of Indus Seals in 1921, many pre-Ashokan epigraphs are now extant, out of which the Cunieform-Brahmi Tablet in the British Museum (5-6 Cent. B.C.) and the pre-Sargonic Djokha Seals (3000-2400 B.C.) from Telloh (Paris-Louvre Museum) are dated evidence on the antiquity of the Indian Scripts. It appears that while the Hindus learnt many secular crafts from the West, the Westerners benefited from the advanced cultural developments of the Easterners, including that of Paninian

studies in linguistics and phonography. The western scribes appear to be satisfied with a smaller number of alphabetic letters, enough to record their trade transactions or commercial communications, due to which all western languages carry the burden of 'spellings' which preserves the history of influences but is an imperfect medium for speech reproduction. The script-historians have traced the evolution of the present-day letters back to the Etruscans **(Turushka** according to Hindu Puranas; About the 'Etruscans', Herodotus (i, 94) informs us that they were of 'Oriental origin'.) Ionian Greek **(Yawana** according to Hindus)—Phoenician **(Pani** according to Hindu Puranas). It is interesting to note that early western letters began with 'A' and ended in 'X'. In Hindu tradition the letters from A to X (Ksha) are called as the 'Garland of Letters–A–X–Maala'; **Rudra-Yamala-Tantra** says 'Oh, A–X–Mala, born of Hymns, thou travellest beyond the rivers, beyond the Islands. beyond the nations', and there is enough epigraphic evidence extant, to substantiate the citation.

Brahmi-Nagari Phonography

The structural elements of the phonetically most elaborate script the Brahmi-Nagari, are illustrated in Table 'B'; for want of space, the subject cannot be detailed here, but, for better appreciation of the structural details the students should refer to **'Lingua Sanscrita'** by M. Rampolla del Tindaro, Rome, 1936, **Introduction to Devanagari'** by Miss Hester Lambert, (London), and my **'Ganesha Vidya'**, 1967.

The Hindu tradition attributes the creation of all Phonemes and Graphemes to Shiva Maheshwara, whose Aphorisms are the Key to the Paninian Grammar and the 'Crescents' stamped by the Shiva's Damaru explain the Cursive elements of Brahmi (Ardhendulasitam). The Deva-Nagari, different Indian provincial scripts, and many further-Indian scripts have evolved out of the Maheshwari-Brahmi Scriptology.

Graphics in Graeko Roman Scripts

The Jews from the 'Fertile Crescent' and the great maritime Arabs of the Middle East have been the historic 'carriers' of knowledge between the East and the West; in the area inhabited by these carriers thousand of inscriptions have been unearthed which provide for the epigraphers interesting links in the evolution of many scripts. Prof. Sprengling in his 'Story of Writing' and Tom Thompson in his 'ABC of our Alphabet' present an interesting and illustrated story of the letter-forms that preceded our modern alphabets. From these and from Mr. A. B. Walawalkar's notes, letters of scripts of historic importance are grouped in phonetically identical classes, for comparative scrutiny (see Table C). The Latin has kept constant the ancient order of the Semetic Signs and their names. It becomes clear from the forms of 1600 B.C. and those of 900 B.C. that—

(a) in the Dental class alone some graphic resemblance has been retained, but

(b) in the Guttural, Labial and Lingual classes the forms have been imported from some other source, possibly Indo-Persian.

The structural elements exhibit the same pattern, which is behind the pattern of the Brahmi Graphics (see Table 'C').

A H

The H (which is the aspirate of A) and A are different in that top of the Aspirate is open while that of A is closed; the Vertibars of A, K and G are laterally image-reversals of the Brahmi-Nagari signs; B is created by adding one crescent to P as in the Brahmi-Nagari letter-plan, but are mirror-reversion of each other in Semetic; they are exact mirror-reversions of the Brahmi-Nagari letters of the same phonetic reflex in D and R, and in it, we see the same graphic pattern.

प P
ब B
D C
R ꓤ

The Greek Alphabet was standardised in 403 B.C. (vide David Diringer in **'Alphabet')** and the letter-order was: A B G(C) D E W(F) Z H **TH** I K L M N O P **KH** Q R S T U(V) **PH** X. According to Diringer (Edition; NY-1948, p. 536): "The original Etruscan alphabet consisted of 26 letters; the Romans adopted only 21 of them. They rejected the 3 Greek aspirate letters **theta, phi,** and **Khi,** as there were no sounds in Latin to correspond to them, but they retained them to represent numbers.

Theta : Θ,O,C ,C became 100 and was later identified with **Centum** (C).

Phi : Φ.CIↃ. ↀM became 1000 and identified with Mille(M) and its half became D for 500.

Khi : ⏚-↓-⊥-L became 50.

"In Ciciro's time (first century B.C.) Y and Z were placed at the end of the alphabet, and Middle Ages added to them U, W and J. In subsequent history 'cursive' or 'running' style of writing was evolved and Latin alphabet was adapted to various languages." (p. 538)

Phonetic Graphics in the Arabic

It will be similarly interesting to observe the clear graphic recurrence of similar elements in the Arabic Script. Keen study of inscriptions found in North and South Arabia show that Semetic influence continued on both north and south of the Central desert till second century B.C., then it continues further in the North for more centuries, but a new script, known as Nabatean, establishes itself by 150 A.D. (vide the Um-ul-Jamal inscription). The Encyclopedia of Islam admits that 'the origin of Nabatean is obscure'. Table 'D' will show that 16 out of 22 Arabic letters are practically identical with letters of the West-Indian Girnar Brahmi inscription. The Nabatean, later, evolved into Koranic Kufic, then Naksh and then Nastaliq. When arranged in phonetic groups, the phenomena of Graphic resemblance is obvious (see Table E).

To the mentally orthodox mind slightest changes about I.P.A.—International Phonetic Alphabet is objectionable; between themselves there is an un-ending controversy within the supporters of diacritics (use of floating accent signs on current letters) and those of diagraphs (use of repetition of current letter, laterally, using two or more letters to represent non-Latin sounds in other languages).

IPA of today is an 'extended' Roman Script and is not likely to be used by the Europeans like the French or the English in their every-day use for reforming their spellings. The 'orthodox' stick to old usage because it is conventional and the 'cultured' will adhere because a history is associated with the "spelling"; ultimately IPA is an attempt to transliterate the Sanskrit, Avesta, and such oriental literature.

> The present extended IPA still remains imperfect, mainly, because unless a convention is established for use of "Matras" (vowelisation signs) in place of using accented 'aeiou', the functional advantage cannot be derived; basically, Western scripts are 'consonantal' scripts (slightly improved by the Greeks by use of lateral placements of five vowels themselves), whereas Indian and Persian (old) scripts are so elaborate in vowelisation that a single vowel, in spite of its independent pronunciation, can be pronounced and written in altogether 18 accents (see Author's **'Devanagari—the script of the Gods')**.

It would be more rational to use an entirely new signary for the I.P.A. using the modern phonetic research as represented by the books—**'The Phonemes'** by Daniel Jones, Cambridge, 1962 and **'Phonetics'** by Kenneth L. Pike, Ann Arbor, U.S.A., 1962. Students of scriptology should also benefit from the failure of the Romanisation movement launched in India. The Indian School of Scripts is more proficient than the Roman writing for reflexing the elaborate languages of the Continent and the geographical extension of India.

Phonetic Graphics

The Pitman's Shorthand is an example of the rational use of phonetic signary. The Pitman's Shorthand was hailed by Eric Gill, the Master-Designer of Lettering, on the background of his remarks—"It is simply

> stupid to make pretence any longer that our letters are a reasonable means of rendering our speech in writing or printing. . . . The first thing to do is to teach everyone phonography—something which reasonably presents the sounds. . . . the only way to reform modern lettering is to abolish it."

Like the Morse code or the punched-tape codes the 'ideal'-IPA should not be a 'reformed-Latin' or 'extended Latin', but should be a perfect Phonography, with rationally designed forms based on phonetic studies.

Thus it is clear that a basic premise exists to postulate a theory on script-formation on a sound phonetic grouping; and it is the remarkable correspondence in various scripts and languages of the world through history which must, I feel, be the basis of developing the future communication, through a rational scheme on the Computers or books or any other media, mechanical or otherwise.

L. S. Wakanker

TABLE 'A'—PHONETIC PERIODICITY IN GRAEKO-LATIN

VOWELS	LABIALS	GUTTURALS	PALATALS	LINGUALS	DENTALS	NASALS
A	B	·	C	D	·	·
E	F	GH	·	·	·	·
I(J)	·	K	·	·	L	MN
O	P	Q	·	R	ST	·
U	VW	X	Y	Z	·	·

TABLE 'B'—PERIODIC PHONETIC IN BRAHMI-NAGARI

PHONETIC grouping After Panini's Grammar **'Ashtadhyayi'**

GRAPHIC grouping Pre-Paninian Maheshwari	GUTTURAL	PALATALS	LINGUALS	DENTALS	LABIALS	DIPTHONGS
VOWELS	अ आ (a ā)	इ ई (i ī)	ऋ (ṛ)	ऌ (ḷ)	उ ऊ (u ū)	ae ai; ओ औ (o au)
MATRAS (Vowelisation Marks)	ा	ि ी	ृ	ॢ	ु ू	े ै ो ौ
	NON-JOINING (A-Yoga-Vaha)				Am	Aha
Soft Consonants	क Ka	च Ca	ट Ta	त Ta	प Pa	All consonants, as well as Conjunct-Consonants (Double, Treble, Quadruple, etc.) in Brahmi-Nagari family of Scripts form syllabic letter-series (Swarakshari) modified with 'Matras' (Vowelisation Marks)
Soft Aspirates	ख Kha	छ Cha	ठ Tha	थ Tha	फ Pha	
Hard Consonants	ग Ga	ज Ja	ड Da	द Da	ब Ba	
Hard Aspirates	घ Gha	झ Jha	ढ Dha	ध Dha	भ Bha	
Nasals	ङ Na	ञ Na	ण Na	न Na	म Ma	
Semi-Vowels	ह Ha	य Ya	र Ra	ल La	व Va	

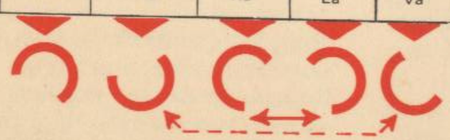


TABLE 'C'— COMPARISON OF ANCIENT SCRIPTS

	GUTTURALS				LABIALS			LINGUALS		DENTALS			
	A	H	K	G	P	B	M	D	R	L	S	T	N
Senai Pictographs 1600 B.C.	Aleph Ox	Heth Fence	Kaph Palm of hand	Gimel Camel	Pe Mouth	Beth House	Mem Waters	Daleth Door	Resh Head	Lamed Ox-goad	Shin Teeth	Tau Mark	Nun Fish
Tyrian Alphabet Semetic (Moab Stone) 900 B.C.													
Brahmi (with dotted alif)													
Greek (Thera) 900 B.C.													
Etruscan 600 B.C.													
Roman (Latin)													
Early Latin	A	H	K	CG	P	B	M	D	R	L	S	T	N

TABLE 'D'—NABATEAN (ARABIC) AND BRAHMI (WESTERN)

	GUTTURALS				LABIALS				PALATALS	LINGUALS		DENTALS	
Nabatean (Arabic)	alif	he	kaf	gain	pe	phe	be	min	ya	dal	re	lam	Sin
(Girnar) Brahmi	a	ha	ka	ga	pa	pha	ba	ma	ya	da	ra	la	sa

TABLE 'E'—PHONETIC GRAPHICS IN ARABIC-PERSIAN

GUTTURALS			LABIALS				PALATAL	LINGUALS			DENTALS	
ع ain	ح ha	ک kaf	(Per) Pe	(Per) pe	Phe	pe	ح (Persian) che	د dal	د dal	ر ra	ل lam	س sin
غ ghain	خ kha	گ khaf	ب be	ف Phe	و wav	م meem	ج jim	ذ dhal	ر ra	ز zay	لا la	ش shin

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WITH COMPLIMENTS FROM

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CORRECTION: Please read Hard and Hard-Aspirate, in place of Soft and Soft-Aspirate, and vice-versa